



THE VOYAGE OF THE "ESQUIMAUX"

Under the Command of Captain James W. Ross, R.N.

1845

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ROUTES

G. H. Johnson

THE ART OF PERFUMERY,

AND

THE METHODS OF OBTAINING

THE ODOURS OF PLANTS.

LONDON:
Printed by SPOTTISWOODE & Co.
New-street-Square.

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THE ART OF PERFUMERY,

AND THE METHODS OF OBTAINING

THE ODOURS OF PLANTS;

WITH INSTRUCTIONS FOR THE MANUFACTURE OF PERFUMES FOR THE
HANDKERCHIEF, SCENTED POWDERS, ODOROUS VINEGARS,
DENTIFRICES, POMATUMS, COSMETIQUES,
PERFUMED SOAP, ETC.



SMELLING. From the Dresden Gallery.

BY G. W. SEPTIMUS PIESSE,

ANALYTICAL CHEMIST:

AUTHOR OF "TWENTY LETTERS ON FARM SCIENCE," IN THE SHREWSBURY CHRONICLE,
ETC. ETC.

TO WHICH IS ADDED AN APPENDIX ON PREPARING ARTIFICIAL
FRUIT ESSENCES, ETC.

SECOND EDITION.

LONDON:

LONGMAN, BROWN, GREEN, LONGMANS, & ROBERTS.

1856.

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PREFACE

TO

THE SECOND EDITION.

THE reception with which the first edition of this work was greeted, pleasingly surprised its author. Nothing more was attempted than to produce a readable Recipe-book of Perfumery.

The few observations on the smelling faculty, sprinkled over its pages, having attracted the attention of those persons to whom such remarks were more particularly addressed, in the present edition a few more notes have been introduced, together with suitable extracts and observations of former writers. Several subjects in the appendix of the former edition have been transferred to more appropriate places.

The valuable statistics furnished by M. Louis

Herman, of Cannes, will be of service to tyro flower farmers, and will reply to the numerous inquiries which the author has received from Ceylon, Penang, Antigua, Jamaica, and other places. These enrichments, together with a copious index which has been introduced, will, he trusts, be acceptable to the reader.

Should his efforts to advance the Art of Perfumery be successful, he will consider himself happy in thus adding to the industrial resources of his country.

LONDON, 2. NEW BOND STREET,

Nov. 19. 1856.

PREFACE

TO

THE FIRST EDITION.

BY universal consent the physical faculties of man have been divided into five senses,—seeing, hearing, touching, tasting, and smelling. It is of matter pertaining to the last-mentioned faculty that this book mainly treats. Of the five senses, that of smelling is the least valued, and, as a consequence, is the least tutored; but from this, our own act, we must not conclude that it is of insignificant importance to our welfare and happiness.

By neglecting to tutor the sense of smelling, we are constantly led to breathe impure air, and thus poison the body by neglecting the warning given at the gate of the lungs. Persons who use perfumes are more sensitive to the presence of a vitiated atmo-

sphere than those who consider the faculty of smelling as an almost useless gift.

In the early ages of the world perfumes were constantly used, and they had the high sanction of Scriptural authority.

The patrons of perfumery have always been considered the most civilised and refined people in the world. If refinement consists in knowing how to enjoy the faculties which we possess, then must we learn not only how to appreciate the harmony of colour and form, in order to please the sight; the melody of sweet sounds, to delight the ear; the comfort of appropriate fabrics, to cover the body, and to please the touch; but the smelling faculty must be shown how to gratify itself with the odoriferous products of the garden and the forest.

Pathologically considered, the use of perfumes is in the highest degree prophylactic; the refreshing feeling imparted by the citrine odours to an invalid is well known. By the mere sprinkling of essence of cedrat in a sick chamber, health has often been restored when life and death trembled in the balance.

The commercial value of flowers is of no mean importance to the wealth of nations. But, vast as is

the consumption of perfumes by the people under the rule of the British Empire, little has been done in England towards the establishment of flower-farms, or the production of the raw odorous substances in demand by the manufacturing perfumers of Britain; consequently, nearly the whole are the produce of foreign countries. I trust, however, that ere long the subject will attract the attention of the Society of Arts, and favourable results will doubtless follow. Much of the waste land in England, and especially in Ireland, could be very profitably employed, if cultivated with odour-bearing plants.

The climate of some of the British colonies especially fits them for the production of odours from flowers that require elevated temperature to bring them to perfection.

But for the lamented death of Mr. Charles Piesse*, Colonial Secretary for Western Australia, flower-farms would doubtless have been established in that colony long ere the publication of this work. Though thus personally frustrated in adapting a new and useful description of labour to British enterprise, I

* Brother of the Author.

am no less sanguine of the final results in other hands.-

Mr. Kemble, of Jamaica, has recently sent to England some fine samples of Oil of Behn. The Moringa, from which it is produced, has been successfully cultivated by him. The Oil of Behn, being a perfectly inodorous fat oil, is a valuable agent for extracting the odours of flowers by the maceration process.

At no distant period I hope to see, either at the Crystal Palace, Sydenham, at the Royal Botanical Gardens, Kew, or elsewhere, an appropriate place to illustrate the commercial use of flowers—eye lectures on the methods of obtaining the odours of plants, and their various uses. The horticulturists of England, being generally unacquainted with the methods of economising the scents from the flowers they cultivate, entirely lose what would otherwise be a profitable source of income. For many ages the Cornish miners, while working the tin streams, threw the copper ore over the cliffs into the sea: how much wealth was thus cast away by ignorance, we know not; but there is a perfect parallel between the old miners and the modern gardeners.

Many readers of the *Gardeners' Chronicle* and of the *Annals of Pharmacy and Chemistry* will recognise in the following pages much matter that has already passed under their eyes.

To be, however, of the service intended, such matter must have a book form; I have therefore collected from the above-mentioned periodicals all that I considered might be useful to the reader.

To Sir William Hooker, Dr. Lindley, Mr. W. Dickinson, and Mr. W. Bastick, I respectfully tender my thanks for the assistance they have so freely given whenever I have had occasion to seek their advice.

2. NEW BOND STREET,
Sept. 1855.

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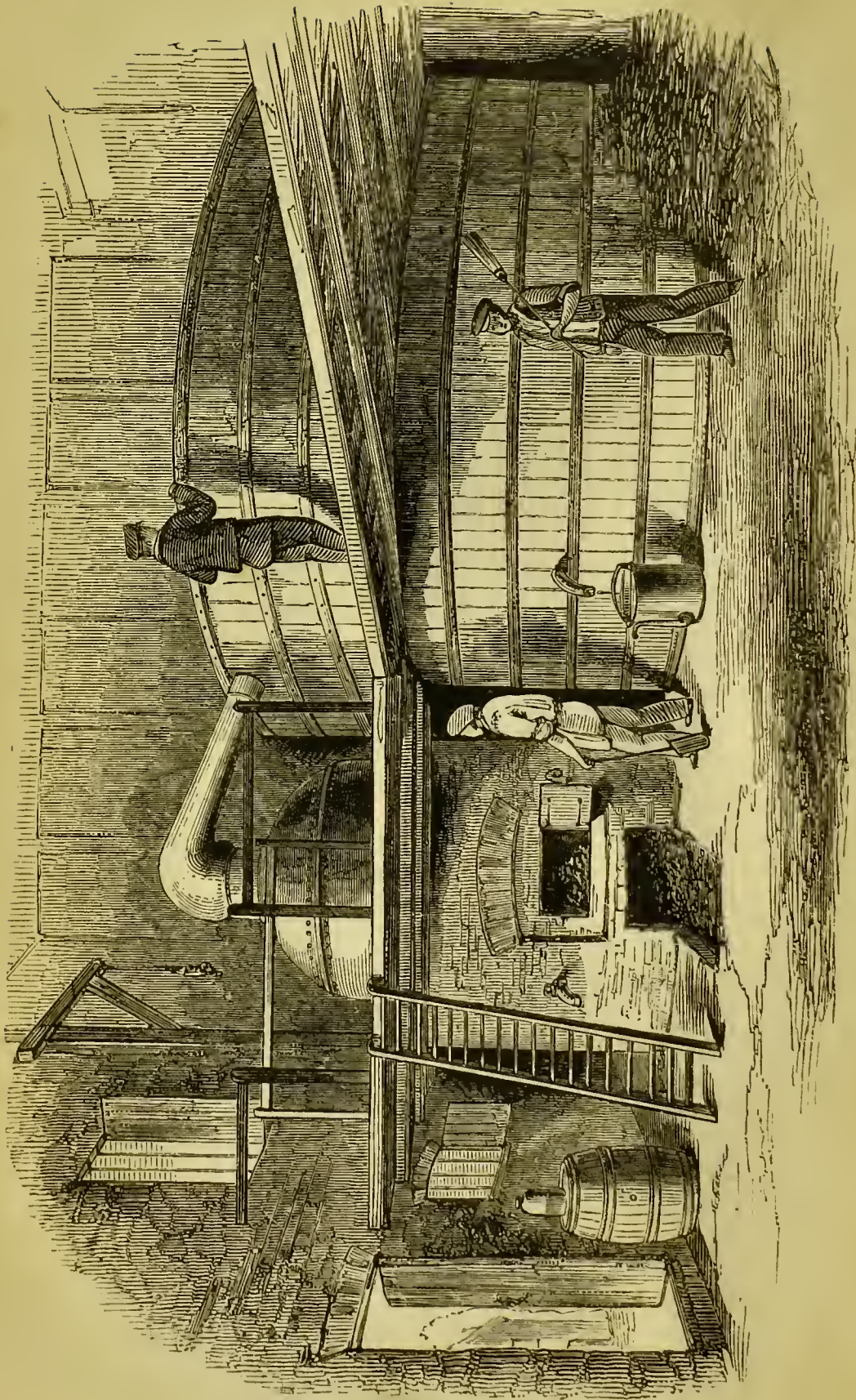
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LAVENDER STILL, AT MITCHAM, SURREY.

THE
ART OF PERFUMERY.

INTRODUCTION AND HISTORY.

SECTION I.

“By Nature’s swift and secret working hand
The garden glows, and fills the liberal air
With lavish odours.

There let me draw
Ethereal soul, there drink reviving gales,
Profusely breathing from the spicy groves
And vales of fragrance.” — THOMSON.

AMONG the numerous gratifications derived from the cultivation of flowers, that of rearing them for the sake of their perfumes stands pre-eminent. It is proved from the oldest records, that perfumes have been in use from the earliest periods. The origin of this, like that of many other arts, is lost in the depth of its antiquity; though it had its rise, no doubt, in religious observances. Among the nations of antiquity, an offering of perfumes was regarded as a token of the most profound respect and homage. Incense, or Frankincense, which exudes by incision and dries as a gum, from *Arbor thurifera*. was

formerly burned in the temples of all religions, in honour of the divinities that were there adored. Many of the primitive Christians were put to death because they would not offer incense to idols.

“Of the use of these luxuries by the Greeks, and afterwards by the Romans, Pliny and Seneca give much information respecting perfume-drugs, the method of collecting them, and the prices at which they sold. Oils and powder perfumery were most lavishly used, for even three times a day did some of the luxurious people anoint and scent themselves, carrying their precious perfumes with them to the baths in costly and elegant boxes called *NARTHECIA*.”

Describing the spectacles and Amphitheatre at Rome, Gibbon * observes, “the air of the Amphitheatre was continually refreshed by the playing of fountains, and profusely impregnated by the grateful scent of aromatics.”

In the Romish Church incense is used in many ceremonies, and particularly at the solemn funerals of the hierarchy, and other personages of exalted rank.

Pliny makes a note of the tree from which frankincense is procured; and certain passages in his works indicate that dried flowers were used in his time by way of perfume, and that they were, as now, mixed with spices, a compound which the modern perfumer calls *pot-pourri*, used for scenting apartments, and generally placed in some ornamental vase.

It was not uncommon among the Egyptian ladies to carry about the person a little pouch of odorous gums, as is the case to the present day among the Chinese, and to wear beads made of scented

* Vol. ii. chap. xii. p. 104.

wood. The “bdellium” mentioned by Moses in Genesis is a perfuming gum, resembling frankincense, if not identical with it.

Several passages in Exodus prove the use of perfumes at a very early period among the Hebrews. In the thirtieth chapter of Exodus the Lord said unto Moses: —“ 1. And thou shalt make an altar to burn incense upon; of Shittim wood shalt thou make it.” “ 7. And Aaron shall burn thereon sweet incense every morning; when he dresseth the lamps he shall burn incense upon it.” “ 34. Take unto thee sweet spices, stacte, and onycha, and galbanum; these sweet spices with pure frankincense: of each shall there be a like weight.” “ 35. And thou shalt make it a perfume, a confection after the art of the apothecary*, tempered † together, pure and holy.” “ 36. And thou shalt beat some of it very small, and put of it before the testimony in the tabernacle of the congregation, where I will meet with thee; it shall be unto you most holy.” “ 37. And as for the perfume which thou shalt make, ye shall not make to yourselves according to the composition thereof; it shall be unto thee holy for the Lord.” “ 38. Whosoever shall make like unto that to smell thereto, shall even be cut off from his people.”

* In Drs. D'Oyly and Mant's Bible this word “apothecary” is italicized *perfumer*.

† “Tempered.” The same writers render this word *salted*, that is, mixed with nitre, which is probably the correct interpretation, because such a mixture of resinous substances would not burn kindly without being previously “tempered” with saltpetre.

“It was from this religious custom, of employing incense in the ancient temples, that the royal prophet drew that beautiful simile of his, when he petitioned that his prayers might ascend before the Lord like incense. It was while all the multitude was praying without, at the hour of incense, that there appeared to Zachary an angel of the Lord, standing on the right side of the altar of incense. (Luke i. 10.) That the nations attached a meaning, not only of personal reverence, but also of religious homage, to an offering of incense, is demonstrable from the instance of the Magi, who, having fallen down to adore the new-born Jesus, and recognised his Divinity, presented Him with gold, myrrh, and frankincense. The primitive Christians imitated the example of the Jews, and adopted the use of incense at the celebration of the Liturgy. St. Ephræm, a father of the Syriac Church, directed in his will that no aromatic perfumes should be bestowed upon him at his funeral, but that the spices should rather be given to the sanctuary. The use of incense in all the Oriental churches is perpetual, and almost daily; nor do any of them ever celebrate their Liturgy without it, unless compelled by necessity. The Coptic, as well as other Eastern Christians, observe the same ceremonial as the Latin Church in incensing their altar, the sacred vessels, and ecclesiastical personages.” — DR. ROCK’S *Hierurgia*.

Gibbon* says: —

“In a magnificent temple, raised on Palatine Mount, the sacrifices of the god Elagabalus (the sun) were celebrated, with every circumstance of cost and solemnity. The rarest aromatics were profusely consumed on his altar.”

Horace in an ode celebrating the return of Augustus from Spain, bids his slaves go and seek for perfumes, and desires the tuneful Neacra to make haste and collect into a knot her scented hair. These passages sufficiently indicate the elegant direction which the taste of the Romans took in the days of

* Decline and Fall, vol. i. chap. vi. p. 234.

this poet, who himself was a voluptuary in flowers and fragrances.

Perfumes were used in the Church service, not only under the form of incense, but also mixed in the oil and wax for the lamps and lights commanded to be burned in the house of the Lord. The brilliancy and fragrance which were often shed around a martyr's sepulchre, at the celebration of his festival, by multitudes of lamps and tapers, fed with aromatics, have been noticed by St. Paulinus: —

“ With crowded lamps are these bright altars crowned,
And waxen tapers, shedding perfume round
From fragrant wicks, beam calm a scented ray,
To gladden night, and joy e'en radiant day.”

DR. ROCK'S *Hierurgia*.

Constantine the Great provided fragrant oils, to be burned at the altars of the greater churches in Rome; and St. Paulinus, of Nola, a writer of the end of the fourth, and beginning of the fifth century, tells us how, in his times, wax tapers were made for church use, so as to shed fragrance as they burned:—

“ Lumina ceratis adolentur odora papyris.”

A perfume in common use, even to this day, was the invention of one of the earliest of the Roman nobles, named Frangipani, and still bears his name; it is a powder, or sachet, composed of every known spice, in equal proportions, to which is added ground iris or orris root, in weight equal to the whole, with one per cent of musk or civet. A liquid of the same

name, invented by his grandson Mercutio Frangipani, is also in common use, prepared by digesting the Frangipane powder in rectified spirits, which dissolves out the fragrant principles. This has the merit of being the most lasting perfume made.

“The trade for the East in perfume-drugs caused many a vessel to spread its sails to the Red Sea, and many a camel to plod over that tract which gave to Greece and Syria their importance as markets, and vitality to the rocky city of Petra. Southern Italy was not long ere it occupied itself in ministering to the luxury of the wealthy, by manufacturing scented unguents and perfumes. So numerous were the *UNGUENTARII*, or perfumers, that they are said to have filled the great street of ancient Capua.” — HOFMANN.

It was a *dictum* of the celebrated Beau Brummell that no man of fashion should use perfumes, but send his linen to be washed and dried on Hampstead Heath. Few subscribed to this arbitrary mandate; and it certainly opposed all precedent, both in ancient and modern times. The use of aromatics in the East may be dated from the remotest antiquity; and, even at the present day, to sprinkle guests with rose-water and perfume them with aloes wood at the close of every visit, is deemed a token of hospitality and friendship. Arabia is the country of perfumes; and in more ancient times it was the practice to keep them in shells, which were thrown up large and beautiful on the shores of the Red Sea. Horace alludes to the same practice as prevalent at Rome when he flourished: —

“Funde capacibu’
Unguenta de conchis.”

Perfumes were also thought to keep well in vessels made of alabaster. Pliny explains the shape of these vessels by comparing them to the pearls called *elenchi*, which are known to have been shaped like pears. In hot climates fragrant oils dispersed unpleasant odours which heat is apt to generate, and thus became essential to the enjoyment of social life. The poets of Greece and Rome were loud in the praise of perfumes. Thus Anacreon (Ode XV.) exclaims : —

“ Let my hair with unguents flow,
With rosy garlands crown my brow.”

The magic skill of Medea consisted in her skill as a perfumer, and as an inventress of warm vapour-baths. Mr. Beloe says of her that she first of all discovered a flower which could make the colour of the hair black or white : such, therefore, as wished to have black hair instead of white, by her means obtained their wish. That the professors of the medical art might not discover her secrets, she used fomentations in her baths in secret. These made men more active, and improved their health ; and as her apparatus consisted of a caldron, wood, and fire, it was believed that her patients were in reality boiled. Pelias, an old and infirm man, using this operation, died in the process.

But these practices were not confined to Oriental nations ; for Herodotus (“ Melpomene,” c. lxxv.) says :— “ The Scythian women bruise under a stone

some wood of the cypress, cedar, and frankincense ; upon this they pour a quantity of water till it becomes of a certain consistency, with which they anoint the body and the face. This at the time imparts an agreeable odour, and when removed on the following day gives the skin a soft and beautiful appearance." In the athletic exercises of the Olympic games, wrestlers and pancratists always anointed their limbs, to render them more supple. In Greece the perfumes of Athens were most esteemed, as we learn from a curious passage preserved in Athenæus, from a fragment of the writings of Antiphānes, and the whole may amuse our readers. It runs thus, showing from what countries different degrees of excellence were obtained in his time : — " A cook from Elis ; a cauldron from Argos ; wine of Phlius ; tapestry of Corinth ; fish from Sicyon ; cheese from Sicily ; the perfumes of Athens ; and the eels of Bœotia."

In *the Lives of the Queens of England* we read, " Perfumes were never richer, more elaborate, more costly or more delicate than in the reign of Elizabeth." Her Majesty's nasal organs were particularly fine ; and nothing offended her more than an unpleasant smell. Perfumes and cosmetics of all kinds were in general use. The cosmetics and other smaller accessories to a lady's toilet were kept in boxes strongly impregnated with some favourite odour, and were called " sweet coffers." This term perpetually occurs in the old writers ; they were reckoned a necessary part of the furniture of all state bed chambers,

and a fair criterion, by their form and richness, of the taste and liberality of the owner. The bottles of perfume connected with the common labours of the toilet were called "casting bottles." The pomander, which originally was meant only as a preventive of infection, as a camphor-bag is now, but became an article of fashionable luxury amongst people of rank, was a little ball of perfumed paste worn in the pocket, or hung round the neck. They soon became mediums for the most exquisite devices in jewellery, and were frequently offered as complimentary tokens, like the snuff-boxes of the present day. Many pomanders were presented to Queen Elizabeth as new-year's gifts, and among the list is the somewhat puzzling item of —

"A farye girdle of pomander."

Perfumed gloves were also fashionable.

Elizabeth had a cloak of Spanish perfumed leather, the value of which may be estimated by stating that pieces of "Peau d'Espagne" are now sold by the Bond Street perfumers of London at the rate of one shilling the square inch; even her shoes were perfumed. The city of course soon imitated the fashion of the court, as is apparent from frequent allusion by the dramatic writers of the time.

The extensive and free use made of essences and scents at this period gave rise to numerous satirical observations by the authors of the day. In ANSTEY'S

New Bath Guide, — Bath then becoming the focus of everything refined and fashionable —

“Bring, oh bring the essence pot!
Amber, musk, and bergamot,
Eau de chipre, eau de luce,
Sanspareil and citron juice.”

As an art in England, perfumery has attained little or no distinction. This has arisen from those who follow it as a trade, maintaining a mysterious secrecy about their processes. No manufacture can ever become great or important to the community that is carried on under a veil of mystery.

“On the subject of trade mystery I will only observe, that I am convinced that it would be far more to the interest of manufacturers if they were more willing to profit by the experience of others, and less fearful and jealous of the supposed secrets of their craft. It is a great mistake to think that a successful manufacturer is one who has carefully preserved the secrets of his trade, or that peculiar modes of effecting simple things, processes unknown in other factories, and mysteries beyond the comprehension of the vulgar, are in any way essential to skill as a manufacturer, or to success as a trader.” — PROFESSOR SOLLY.

“In the dark ages it was always a secret, a mystery, or a craft, in the hands of a guild, a profession, or a fraternity of some sort or other. In those days wisdom preyed upon ignorance, and nobody cared to know anything except as a means of overreaching his neighbour. Science being thus divorced from reason, and robbed of its innocence, so to speak, was very naturally treated as a species of witchcraft, and a man who stole a march on the average intellect of the day was not unfrequently burnt for a dealer in the black art. It is well known that many who so suffered had to thank themselves for the delusion which proved fatal to them, as they had purposely mystified their knowledge of nature. There are secrets in these days, many of

which are as highly prized and as jealously guarded as the secrets of mediæval art. Yet an atmosphere of secrecy is not generally conducive to public improvement, or even to private advantage. The first manufacturers of the age have no secrets. They are ready to show their works to any respectable stranger; and, even if they have gained upon their neighbours in some device for the economy of labour or material, they won't keep it to themselves. They trust to an improving spirit, and to an energy always in advance, rather than to the exclusive possession of this or that little 'dodge.' Small people don't understand this. They are always looking out for the trick which is to open the door of fortune, and show the royal road to inexhaustible wealth." — *Times*, Oct. 31. 1855.

If the horticulturists of England were instructed how to collect the odours of flowers, a new branch of manufacture would spring up to vie with our neighbours' skill in it across the Channel.

Time was, when in the *still-room* "distilled waters" and "cordials" were drawn and dispensed as specifics for maladies to guests and dependants, but now this practice is out of use, because they can be purchased cheaper than they can be made at home; nevertheless the *still-room maid* preserves her name, though rarely required to perform her ancient duties.*

* To expect the revival of this part of domestic economy would be absurd, yet we must say that a domestic laboratory attached to the conservatory would prove highly instructive and amusing. To those even who have no conservatory, we would yet advise to set a room apart in their mansions, with the title of "laboratory," or the ancient one of "still-room." Here experiments may be made, scents distilled, and an acquaintance courted with "common things," without interfering with other people of the establishment, or "making a mess

In NICHOLS'S *Progress of Queen Elizabeth*, he mentions that at Hawkstead among the rooms on the ground floor was one called the "still-room," an apartment where ladies of the court much amused themselves in distilling fragrant waters.

In the "Northumberland Household Book," a work so often quoted by historians, there appears the following list of plants: Roses, Barage, Fumitory, Brakes, Columbynes, Oak-leaf, Harts-tongue, Draggon, Parcelly, Balme, Walnut-leaves, Ox-tongue, Primrose, Sage, Sorrel, Betony, Cowslip, Elder-flowers, Mary-gold, Tansy, and others, all for the use of the still-room.

All great men's houses possessed such an apartment, and ladies took lessons in the art of preparing perfumes and washes.

Shakspeare makes Cleopatra study (though it would seem for dangerous purposes) the properties of plants, and Cymbaline order the gathering of innocent flowers, to cover as guilty an object.

Advocating the proper use of the olfactory faculty as we do, it gives pleasure to quote a passage bearing

about the house." The amount of instruction that can be derived from a private laboratory is far more than at first sight can be conceived, and the entertainment, changeable as a kaleidoscope, is intellectually considered immeasurably superior either to crochet or Berlin work. The delicate manipulations of chemical experiments is well, even better, suited to their physical powers than to the sterner sex, and to the ladies, therefore, we commend the charge of becoming the *chefs* of the modern still-room.

upon the subject from SIR W. TEMPLE'S *Essay on Health and Long Life*.

“Fumigation, or the use of scents, is not, that I know of, at all practised in our modern physic, nor the power and virtues of them considered among us, yet they may have as much to do good, for ought I know, as to do harm, and contribute to health as well as disease, which is too much felt by experience in all that are infectious, and by the operations of some poisons that are received by the smell. How reviving as well as pleasing some scents of herbs and flowers are, is obvious to all; how great virtues they may have in diseases, especially of the head, is known to few, but may easily be conjectured by any thinking man.

* * * * *

“I remember,” he continues, “that walking in a long gallery of the Indian House of Amsterdam, where vast quantities of mace, cloves, and nutmegs were kept in great open chests all along one side of the room. I found something so reviving by the perfumed air, that I took notice of it to the company with me, which was a great deal, and they all were sensible of the same effect, which is enough to show the power of smells and their operations both upon the health and humour.”

Of our five senses, that of SMELLING has been treated with comparative indifference. However, as knowledge progresses, the various faculties with which the Creator has thought proper in his wisdom to endow man will become developed, and the faculty of Smelling will meet with his share of tuition as well as Sight, Hearing, Touch, and Taste.

St. Paul tells the Corinthians, “that there should be no schism in the body, but that the members should have the same care one for another. And whether one member suffer all the members suffer with it; or one member be honoured all the members rejoice in it; nay, much more those members which

seem to be more *feeble* are necessary. If the whole body were an eye, where were the hearing? if the whole were hearing, where were the smelling?" These arguments appear so conclusive in favour of a just and proper estimation of the value of smelling, that it would seem impossible to neglect it without bodily suffering as a consequence.

Practically, the author has always found it so: among the lower orders, bad smells are little heeded; in fact, "noses have they, but they smell not;" and the result is, a continuance to live in an atmosphere laden with poisonous odours, whereas any one with the least power of smelling retained shuns such odours, as they would any other thing that is vile or pernicious. In the public schools "common things" are now being taught; to complete the idea, youth must be instructed that, when the nose is offended, the body will indirectly suffer. If they are not taught to know by name every odour that they smell, they can at least be made familiar with the deadly effects of Sulphuretted Hydrogen, and other of the putrescent gases, and so avoid them in future life.

The influence of this sense over the frame is very remarkable: one odour will instantly produce loathing, nausea, and vomiting, another has a part in producing an exhilarating effect upon the mind, such as the fragrance of the country air on a spring morning, or the sweet sea breeze laden with the brominic odours from stranded weeds. The first smell of the sea to a landsman, wonderfully affects the nervous system.

The fragrance of the fields in hay-making time, a walk in a garden at evening's close, all produce an exhilarating effect upon the mind.

Odours are capable of a very wide diffusion. A single grain of musk has been known to perfume a large room for the space of twenty years. Consider how often, during that time, the air of the apartment must have been renewed, and have become charged with fresh odour! At the lowest computation, the musk had been subdivided into 320 quadrillions of particles, each of them capable of affecting the olfactory organs. The vast diffusion of odorous effluvia may be conceived from the fact, that a lump of assa-fœtida, exposed to the open air, lost only a grain in seven weeks. Yet, since dogs hunt by the scent alone, the effluvia emitted from the several species of animals, and from different individuals of the same race, must be essentially distinct. The vapour of pestilence conveys its poison in a still more subtle and attenuated form. The seeds of contagion are known to lurk, for years, in various absorbent substances, which scatter death on exposure to the air.

“In life's parterre, there is nothing sweeter than the unveiled breast of the perfumed garden, pouring forth its exquisitely grateful odours unto the summer's sun of heaven. The fragrance-breathing flowers were meant by the *Great Gardener* to grow and be enjoyed by humankind — their titles, honours, and distinctions to be treasured up by the modern alchymist, and their essences launched forth by his skill in faultless perfection, as a priceless purge to strengthen the rank and surfeited sense, and healthfully energize our weakened powers.”

SECTION II.

“Were not summer’s distillations left
 A liquid prisoner, pent in walls of glass,
 Beauty’s effect of beauty were bereft,
 Nor it, nor no remembrance what it was;
 But flowers distilled, though they with winter meet,
 Leese but their show, their substance still lives sweet.”

SHAKSPEARE.

FLOWERS yield perfumes in all climates, but those growing in the warmer latitudes are most prolific in their odour, while those from the colder are the sweetest. Hooker, in his travels in Iceland, speaks of the delightful fragrance of the flowers in the valley of Skardsheidi; we know that winter-green, violets, and primroses are found here, and the wild thyme in great abundance. Mr. Louis Piesse, in company with Captain Sturt, exploring the wild regions of South Australia, writes: “The rains have clothed the earth with a green as beautiful as a Shropshire meadow in May, and with flowers, too, as sweet as an English violet; the pure white anemone resembles it in scent. The yellow wattle, when in flower, is splendid, and emits a most fragrant odour.”

“Every country and clime offers up its ripened odours from the earth to the Most High. The mighty and majestic Alps are redolent with choicest aromatics; the frigid zone is sumptuous with rarest perfumes; that wrinkled and garrulous old grey-beard, Ocean, lavishes up ambergris on his sands; the hottest region, the torrid zone, regale the senses with their concentrated volatile spirits, constituting the delicious *aroma* of their divers products, unknown to chymical analyses.”—FORSTER KER.

Though many of the finest perfumes come from the East Indies, Ceylon, Mexico, and Peru, the South of Europe is the only real garden of utility to the perfumer. Grasse and Nice are the principal seats of the art; from their geographical position, the grower, within comparatively short distances, has at command that change of climate best fitted to bring to perfection the plants required for his trade. On the sea-coast, his cassie grows without fear of frost, one night of which would destroy all the plants for a season; while, nearer the Alps, his violets are found sweeter than if grown in the warmer situations, where the orange tree and mignonette bloom to perfection. England can claim superiority in the growth of lavender and peppermint; the essential oils extracted from these plants grown at Mitcham, in Surrey, and at Hitchin, in Hertfordshire, realise eight times the price in the market of those produced in France or elsewhere, and are fully worth the difference for delicacy of odour. At Cannes are produced all the products of rose, tubereuse, cassie, jasmine, and orange-*neroli*. At Nîsnes the cultivators direct their chief attention to thyme, rosemary, aspic, and lavender. At Nice the factors have a *spécialité* for violet and rézéda. Sicily yields lemon, bergamot, and orange.

The odours of plants reside in different parts of them, sometimes in the roots, as in the iris and vitivert; the stem or wood, in cedar and santal; the leaves, in mint, patchouly, and thyme; the flower,

in the roses and violets; the seeds, in the Tonquin bean and caraway; the bark in cinnamon, &c.

Some plants yield more than one odour, which are quite distinct and characteristic. The orange tree, for instance, gives three—from the leaves one called *petit grain*; from the flowers we procure *neroli*; and from the rind of the fruit, essential oil of orange, named "*Portugal*." On this account, perhaps, this tree is the most valuable of all to the operative perfumer.

The fragrance or odour of plants is owing, in nearly all cases, to a perfectly volatile oil, either contained in small vessels, or sacs, within them, or generated from time to time, during their life, as when in blossom. Some few exude, by incision, odoriferous gums, as benzoin, olibanum, myrrh, &c.; others give, by the same act, what are called balsams, which appear to be mixtures of an odorous oil and an inodorous gum. Some of these balsams are procured in the country to which the plant is indigenous by boiling it in water for a time, straining, and then boiling again, or evaporating it down till it assumes the consistency of treacle. In this latter way is balsam of Peru procured from the *Myroxylon peruvianum*, and the balsam of Tolu from the *Myroxylon toluiferum*. Though these odours are agreeable, they are not much applied in perfumery for handkerchief use, but by some they are mixed with soap, and in England they are valued more for their medicinal properties than for their fragrance.

The odours of flowers are more generally secreted during the sunshine, or at least in the day time, but there are some which yield no odour in the day, but are very fragrant in the evening, such as the *Cestrum nocturnum*, the *Lychnis vespertina*, some of the *Catasetum* and the *Cymbidium*.

There are a few flowers which receive their specific name, *tristis*, SAD, on account of their being odoriferous only at night; such are *Hesperis tristis*, *Nyctanthes arbor tristis*.

In an article in the *Journal de Pharmacie**, by M. Recluz, "on the effects of the sun's rays upon the flowers of the *Cacalia septentrionalis*," he says, "when the sun shines upon the flowers of this plant, they are odoriferous, but when the sun's rays are intercepted by artificial means—that is, by interposing the hand,—their odour quickly disappears, but their fragrance returns as rapidly when the shade is removed."

Marren states, as quoted by Dr. Balfour, that the flowers of the *Habenaria bifolia*, growing near Liége, which are quite scentless during the day, give out a pleasant penetrating aroma in the evening, usually about 11 p. m. He found that the perfume manifested itself at twilight, exhibited the greatest energy at the time when the darkness of night prevailed, and decreased with the dawn. Two ra-

* Page 216., 1827.

cines of flowers of this orchid were placed in two cylindrical glasses filled with water, in which the plants were totally submerged, one glass was placed in the sunshine, the other in the shade. As evening came on, a delicious aroma became evident, and was emitted during the night, but disappeared at sunrise. These experiments induced Marren to come to the conclusion that the odour of flowers depends on some physiological cause, and not on the evaporation of particles, nor the accumulation of them in parts of the plants where they have their origin. He found that aromatic orchids, such as the *Marillaria aromatica*, lost their perfume half an hour after the application of pollen had been artificially made, and that the unfertilised flowers retained their odour the longest time.

M. Trinchinetti, who has also experimentalised on the odours of plants, divides odoriferous flowers into two classes : —

1. Those in which the intermission of odour is connected with the opening and closing of the flower ; and in this class there are two subdivisions.

A. Flowers which are closed and scentless during the day, and are open and odoriferous at night, such as *Mirabilis jalapa*, *M. dichotoma*, *M. longiflora*, *Datura ceratocaula*, *Nyctanthes arbor tristis*, *Cereus grandiflorus*, *C. nycticalus*, *C. Serpentinus*, *Mesembryanthemum noctiflorum*, and some species of *Silene*.

B. Flowers which are closed and scentless during the night, and are open and odoriferous during the

day, such as, *Convolvulus arvensis*, *Cucurbita pepo*, *Nymphæa alba*, and *Nymphæa cærulea*.

2. Flowers which are always open, but which are odoriferous at one time and scentless at another. Under this class there are two sections: —

A. Flowers always open, and only odoriferous during the day, such as, *Cestrum diurnum*, *Caronilla glauca*; and *Cacalia septentrionalis*.

B. Flowers always open, but only fragrant at night such as *Pelargonium triste*, *Cestrum nocturnum*, *Hesperis tristis*, and *Gladiolus tristis*.

The exudation of odours by nocturnal flowers sometimes takes place in a peculiarly intermittent manner. Thus, in the night-blooming *Cereus* (*Cereus grandiflorus*), the flowers are fragrant only at intervals, giving out puffs of odour every half hour, from eight in the evening till midnight. Balfour*, on the authority of Marren, states that on one occasion the flowers began to expand at six o'clock in the evening, when the first fragrance was perceptible in the hothouse. A quarter of an hour afterwards, the first puff of odour took place, after a rapid motion of the calyx; at twenty-three minutes past six there was another powerful emanation of fragrance; by thirty-five minutes past six, the flowers were completely open; at a quarter to seven the odour of the calyx was the strongest, but modified by

* Balfour's Class Book of Botany.

the petals; after this time the emanation of odour took place at the same periods as before.

Observations have been made by Köhler and Schübler*, in regard to odoriferous flowers as occurring in species belonging to certain orders in relation to their colours. They have formed a Table of the coloured flowers, which they examined according to their odoriferous qualities, and the colours which they bear.

COLOURS.	Species.	Odoriferous.	Odours Agreeable.	Disagreeable Odours.
White -	1193	187	175	12
Yellow -	951	75	61	14
Red - -	923	85	76	9
Blue - -	594	31	23	7
Iris - -	307	23	17	6
Green (?) -	153	12	10	2
Orange -	50	3	1	2
Brown -	18	1	—	1

As will be seen by the above Table, the white flowers are the most fragrant and pleasing to the smell, while the orange and brown coloured flowers are of little use to the perfumer.

The *Monocotyledons* examined were found to contain 14 per cent. of odoriferous species, while the *Dicotyledons* only contain 10 per cent. In the case of the natural orders examined, the colours were associated with the odours as follows:—

* Quoted by Balfour.

NATURAL FAMILY.	PREVAILING COLOUR.	ODORIFEROUS FLOWERS PER CENT.
Water Lily family -	White and Yellow -	22
Rose -	Red, Yellow, and White -	13·1
Primrose -	White and Red -	12·3
Borage -	Blue and White -	5·9
Convolvulus -	Red and White -	4·13
Ranunculus -	Yellow -	4·11
Poppy -	Red and Yellow -	2
Campanula -	Blue -	1·31

In laying out a garden which we may desire to please us by its fragrance as well as its beauty, we cannot do better than be guided by the above facts in the selection of flowers to cultivate in it, nor can those who admire the paradisiacal perfume of a garden at evening's close neglect the growth of nocturnal flowers without losing many pleasures derived from the particles which they throw into the "breath of life," so subtle and ethereal withal as to be beyond the material grasp of the chemical philosopher.

The extensive flower farms in the neighbourhood of Nice, in Sardinia; Montpellier, Nîmes, Grasse, and Cannes, in France; at Adrianople (Turkey in Europe); at Broussa and Uslak (Turkey in Asia; at Gazepore (India), and at Mitcham and Hitchin, in England, in a measure indicate the commercial importance of that branch of chemistry called Perfumery.

British India and Europe consume annually, at the very lowest estimate, 150,000 gallons! of per-

fumed spirits, under various titles, such as Hungary Water, Essence of Lavender, Esprit de Rose, &c. The art of Perfumery does not, however, confine itself to the production of scents for the handkerchief and bath, but extends to imparting odour to inodorous bodies, such as soap, oil, starch, and grease, which are consumed at the toilette of fashion. Some idea of the commercial importance of this art may be formed, when we state that one of the large perfumers of Cannes, M. Herman, employs annually 140,000 lbs. of orange flowers, 12,000 lbs. of cassie flowers, 140,000 lbs. of rose leaves, 32,000 lbs. of jasmine blossoms, 20,000 lbs. of violets, 8,000 lbs. of tubereuse, 16,000 lbs. of cassie, besides rosemary, mint, lemon, citron, thyme, and other odorous plants in larger proportion. In fact, the quantity of odiferous substances used in this way is far beyond the conception of those even used to abstract statistics.

PARTICULARS RELATIVE TO PERFUMERY.

Thirty thousand jasmine plants will occupy an area of land equivalent to 1500 metres, and will produce during the entire season, 1000 kilogrammes of flowers.

Five thousand rose-tree plants will occupy 1800 metres of land, and will produce 10 kilogrammes of rose-flowers during the season.

One hundred orange-trees, at the age of 10 years,

will occupy 4000 metres of land, and will produce, during the season, 1000 kilogrammes of orange-flowers.

Eight hundred geranium plants will occupy 200 metres of land, the produce of which, during the season, will be 1000 kilogrammes of geranium-flowers.

Violets. — 5000 metres of land, planted with violets, will produce 1000 kilogrammes of violet-flowers during the season.

Tuberose. — 70,000 tuberose-roots will produce 1000 kilogrammes of flowers during the season, and will require 1000 metres of land for their culture.

The annual produce of violet-flowers at Nice and at Cannes amounts to 25,000 kilogrammes (Grasse does not produce violets), the annual manufacture of which into oils and pomades is 12,000 kilogrammes; if, however, the produce furnished by the different manufactures were genuine, they would not be able to produce more than 6000 kilogrammes of the essence in its pure state from the quantity of flowers just mentioned.

Nice produces 200,000 kilogrammes of orange-flowers annually.

The produce of orange-flowers at Cannes, and the adjacent villages is 425,000 kilogrammes; these are of a much superior quality and in every way better adapted for manufacture than those of Nice, which are, indeed, fit for distillation only.

One thousand kilogs. of orange-flowers produce 800 grammes of pure neroli; 600 kilogs. of orange-flower leaves produce 1 kilog. of pure petit grain.

Cannes produces annually from 16,000 to 18,000 kilogrammes of cassie-flowers. It may be remarked, that the cassie-flower is a product which belongs exclusively to the soil of Cannes, as the tree which produces it will not grow to perfection either at Nice or at Grasse. The last-named locality is also deficient in the production of orange-trees; these are obtained only from Cannes for the manufacture of pomades, and from Nice for distillation.

The flowers employed in the manufacture of perfumery, such as the rose, the jasmine, and the tuberose, are not so generally cultivated at Grasse as at Cannes.

The annual produce of Grasse and Cannes, and of the adjacent villages, is 40,000 kilogrammes of roses, 50,000 kilogrammes of jasmine, and 10,000 kilogrammes of tuberoses.

Orange-flower Waters. — According to the quantity of orange-flowers stated to be produced at Cannes and at Nice, which two places are, indeed, the only sources from which perfumery in general, without exception, is to be obtained, not more than 465,000 litres or kilogrammes of orange-flower water can be either manufactured or distilled in a pure state with the quantity of orange-flowers supplied to the distillers by the manufacturers of pomades; whereas, the adulteration of this article is

so great, that upwards of 1,000,000 kilogrammes of spurious orange-water is exported, and that to the injury of the health of the consumers. It is, therefore, highly important that the distillation of these flowers should be subject to a strict surveillance.

This abuse may be remedied either by the institution of a commission for that purpose at Cannes, or by the appointment of an inspector, whose office should be to examine the distilled waters at the moment they leave the distiller's, and who should be empowered to punish severely in cases in which leaf-water, or any other fraudulent mixture, may be sold by him under the name of orange-flower water.

For my own part, it would give me great pleasure if the French government, whose solicitude for all matters concerning the public good is so great, would devote its attention to this important subject.

Grasse and Cannes, manufacture annually: —

Kilogs.	
150,000	of pomades and scented oils.
250	of pure otto of neroli.
450	„ otto of petit grain.
4000	„ otto of lavender.
1000	„ Roman essence.
1000	„ otto of thyme.

The otto of neroli and of petit grain produced at Cannes are far superior in quality to those produced at Grasse. The reason for this difference is obvious, for as Grasse does not produce the flowers which are most generally used in the manufacture of perfumery, and can obtain them from

Cannes only, a long time must necessarily elapse between the time of gathering them, and that of their manufacture, added to which also, their conveyance during the heat of summer is at all times detrimental.

It would be advantageous to the manufacturer, and also to the consumer, if the flowers were consumed in the locality in which they are produced, in order that they may be obtained in as fresh a state as possible. It is for this object that Cannes has witnessed the erection of a large perfumery establishment in the midst of the gardens of M. Constant Herman, of Paris, which is certainly without an equal in the country, and which, owing to the excellent condition of his productions, has not failed to gain for him much popularity for the excellence and superiority of his produce. This establishment manufactures annually from 38,000 to 40,000 kilogs. of pomades and scented oils.

To the chemical philosopher, the study of Perfumery opens a book as yet unread; for the practical perfumer, on his laboratory shelves, exhibits many rare essential oils, such as essential oil of the flower of the *Acacia farnesiana*, essential oil of violets, tubereuse, jasmine, and others, the compositions of which have yet to be determined.

The exquisite pleasure derived from smelling fragrant flowers, would almost instinctively induce man to attempt to separate the odoriferous principle from them, so as to have the perfume when the season

denies the flowers. Thus we find the alchemists of old torturing the plants in every way their invention could devise for this end; and it is on their experiments that the whole art of Perfumery has been reared.

SECTION III.

WITHOUT recapitulating those facts which may be found diffused through nearly all the old authors on medical botany, chemistry, pharmacy, and works of this character, from the time of Paracelsus to Celnart, we may state at once the mode of operation adopted by the practical perfumer of the present day for preparing the various extracts or essences, waters, oils, pomades, &c., used in his calling.

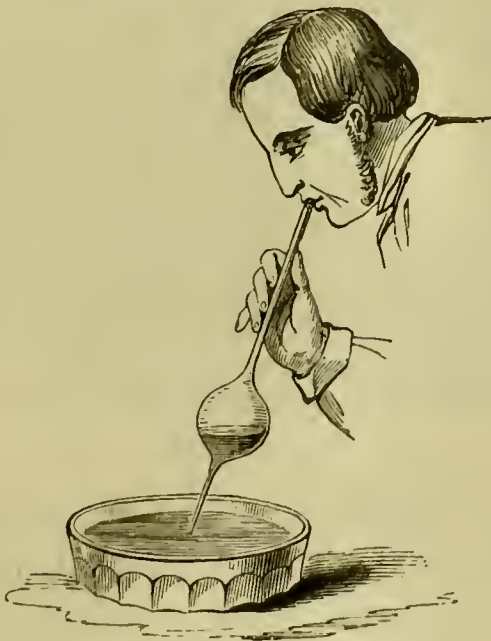
The processes are divided into four distinct operations; viz.: —

1. *Expression*; 2. *Distillation*; 3. *Maceration*;
4. *Absorption*.

1. *Expression* is only adopted where the plant is very prolific in its volatile or essential oil, — *i. e.* its odour; such, for instance, as is found in the pellicle or outer peel of the orange, lemon, and citron, and a few others. In these cases, the parts of the plant containing the odoriferous principle are put, sometimes in a cloth bag, and at others by themselves, into a press, and by mere mechanical force it is squeezed out. The press is an iron vessel of immense strength, varying in size from six inches in diameter, and twelve deep, and upwards, to contain one hundredweight or more; it has a small aperture at the bottom to allow the expressed material to run

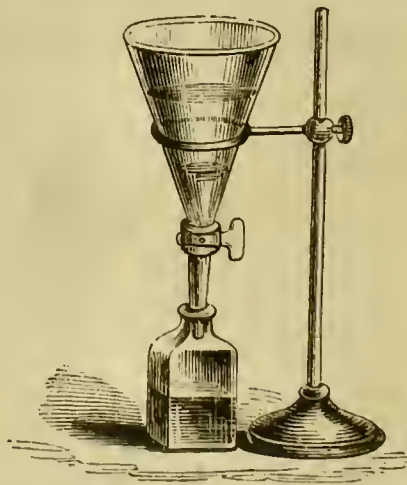
for collection ; in the interior is placed a perforated false bottom, and on this the substance to be squeezed is placed, covered with an iron plate fitting the interior ; this is connected with a powerful screw, which, being turned, forces the substance so closely together, that the little vessels containing the essential oils, are burst, and it thus escapes. The common tincture-press is indeed a model of such an instrument. Another form of press is illustrated at page 38. The oils which are thus collected are contaminated with watery extract, which exudes at the same time, and from which it has to be separated ; this it does by itself to a certain extent, by standing in a quiet place, and it is then poured off and strained.

2. *Distillation.*—The plant, or part of it which contains the odoriferous principle, is placed in an iron, copper, or glass pan, varying in size from that



Pipette to draw off small portions of otto from water.

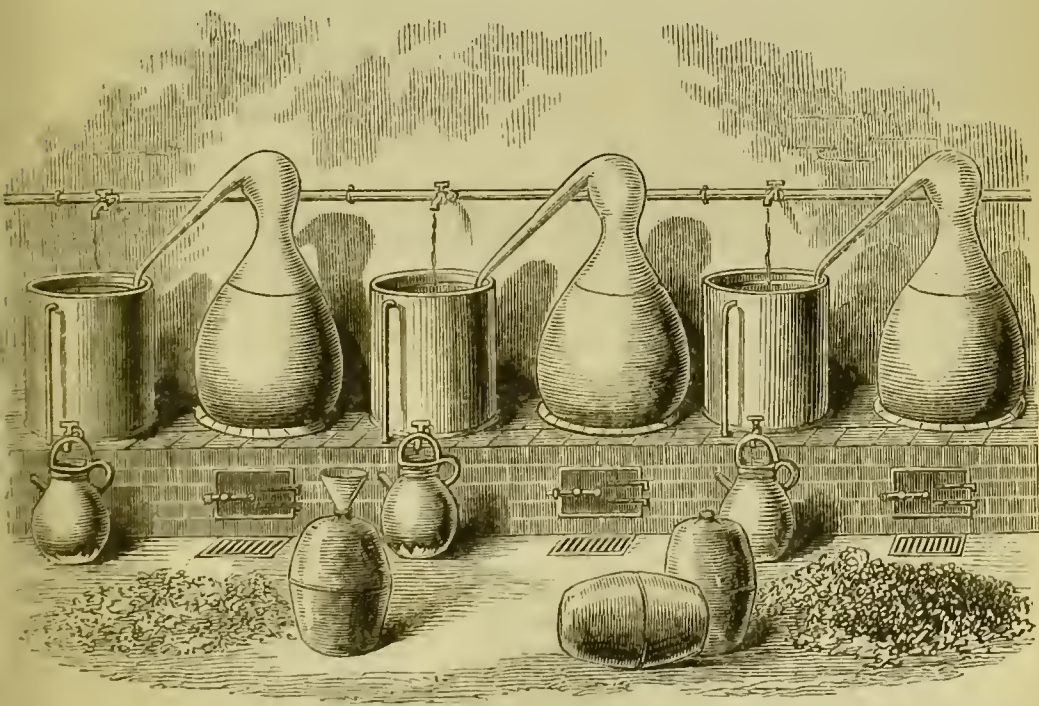
capable of holding from one to twenty gallons, and covered with water; to the pan a dome-shaped lid is fitted, terminating with a pipe, which is twisted corkscrew fashion, and fixed in a bucket, with the end peeping out like a tap in a barrel. The water in the still — for such is the name of the apparatus — is made to boil; and having no other exit, the steam must pass through the coiled pipe; which, being surrounded with cold water in the bucket, condenses the vapour before it can arrive at the tap. With the steam, the volatile oils — *i. e.* perfume — rises, and is liquefied at the same time. The liquids which thus run over, on standing for a time, separate into two portions, and are finally divided with a funnel having a stop-cock in the narrow part of it. By



Tap funnel for separating ottos from waters and spirits from oil.

this process, the majority of the volatile ottos are procured. In some few instances alcohol — *i. e.* rectified spirit of wine — is placed upon the odorous materials in lieu of water, which, on being distilled,

comes away with the perfuming substance dissolved in it. But this process is now nearly obsolete, as it is found more beneficial to draw the oil or essence first with water, and afterwards to dissolve it in the spirit. The low temperature at which spirit boils, compared with water, causes a great loss of otto, the heat not being sufficient to disengage it from the plant, especially where seeds, such as cloves or caraway, are employed. The illustration of the gigantic still of Mitcham, facing the front page of this work, exhibits a practical working apparatus capable of receiving a ton of herbs to distil at one time.



Stills.

The stills employed by M. Louis Herman, of Cannes, Var, France, are much smaller than the Mitcham still, but instead of one there are thirteen, side by side under one roof, as shown in the annexed

sketch. The water used to keep the worms cool is supplied by natural springs which flow to any part of the manufactory in inexhaustible quantities from the neighbouring base of the Alps. In this respect M. Pilar, of Grasse, is equally fortunate, the cost of such water being merely a small sum paid to the Town every year. The French houses work their stills by the direct action of the fire to the still, which is liable to give an empyreumatic or burnt smell to the distillate; but in all the well regulated perfumatories of Bond Street, London, the stills are worked by the steam, under ten or fifteen pounds' pressure, from a boiler. It so happens, however, that the finest odours, the *recherché*, as the Parisians say, cannot be procured by this method; then recourse is had to the next process.

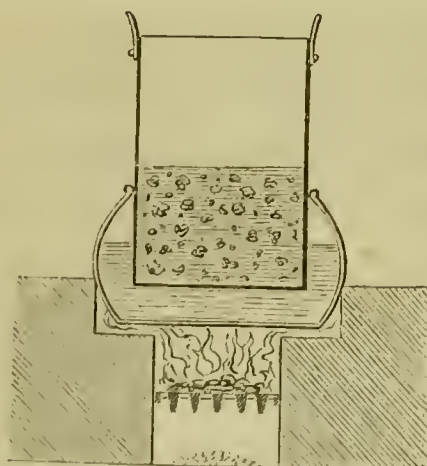
3. *Maceration*.—This operation is conducted thus:—For what is called pomade, a certain quantity of purified beef or deer suet, mixed with purified lard, is put into a clean metal or porcelain pan; this being melted by a steam heat or bath, the kind of flowers required for the odour wanted are carefully picked and put to the liquid fat, and allowed to remain from twelve to forty-eight hours; the fat has a particular affinity or attraction for the otto of flowers, and thus, as it were, draws it out of them, and becomes itself, by their aid, highly perfumed; the fat is strained from the spent flowers, and fresh are added ten or fifteen times over, till the pomade is of the required strength; these various strengths of pomatums are

noted by the French makers as Nos. 6. 12. 18. and 24., the higher numerals indicating the amount of



Bains-Marie, &c.

fragrance in them. For perfumed oils, the same operation is followed; but, in lieu of suet, fine olive



Section of Bain-Marie.

oil, and the same results are obtained. The maceration pans are here illustrated as used by M. March,

of Nice. These oils are called “Huile Antique” of such and such a flower.

The orange, rose and cassie compounds are principally prepared by this process.

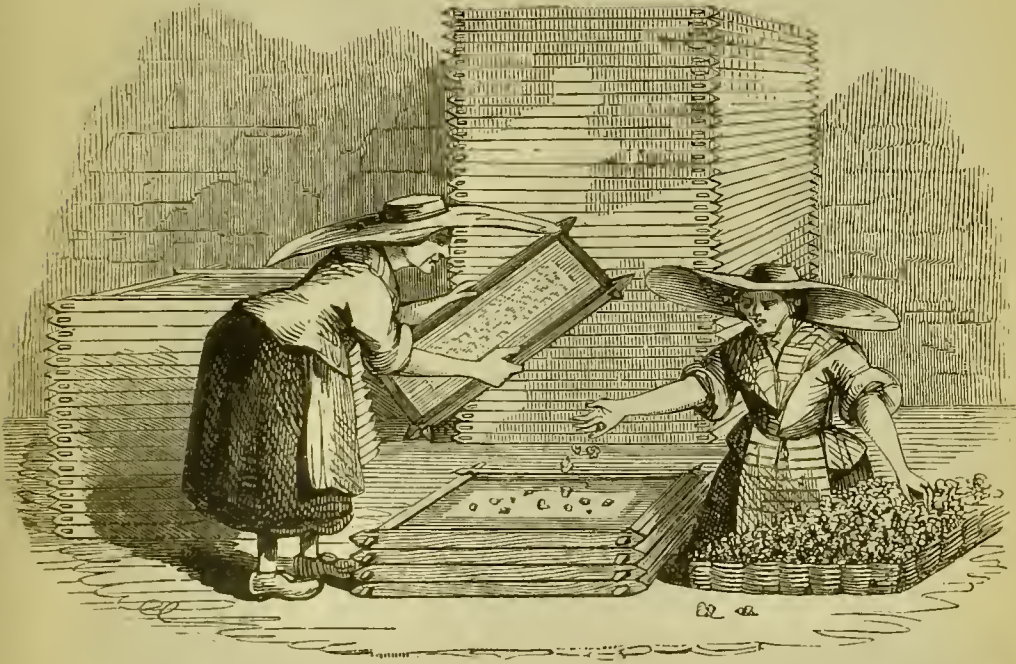
The violet and rézéda pomades and oils are prepared first by the maceration process and then finished by *enfleurage*.

When neither of the three foregoing processes gives satisfactory results, the method of procedure adopted is by,

4. *Absorption* or *Enfleurage*.—Of all the processes for procuring the perfumes of flowers, this is the most important to the perfumer, and is the least understood in England; as this operation yields not only the most exquisite essence indirectly, but also nearly all those fine pomades known here as “French pomatums,” so much admired for the strength of fragrance, together with “French oils,” equally perfumed. The odours of some flowers are so delicate and volatile, that the heat required in the previously named processes would greatly modify, if not entirely spoil, them; this process is, therefore, conducted cold, thus: — Square frames, called a *châssis*, about three inches deep, with a glass bottom, say two feet wide and three feet long, are procured; over the glass a layer of fat is spread, about a quarter of an inch thick, with a kind of plaster knife or spatula; on this the flower buds are sprinkled, completely over it, and there left from twelve to seventy-two hours.

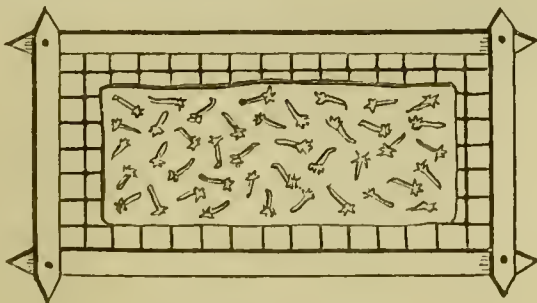
Some houses, such as that of Messrs. Pilar and

Sons, Pascal Brothers, L. Herman, and a few others, have 3000 such frames at work during the season; as they are filled, they are piled one over the other, the flowers are changed so long as the plants continue to bloom, which now and then exceeds two or three months.



Châssis en Verre.

For oils of the same plants, coarse cotton cloths are imbued with the finest olive oil, and laid upon a frame containing wire gauze in lieu of glass; on these the flowers are laid, and suffered to remain till fresh flowers are procured.



Châssis en Fer.

This operation is repeated several times, after which the cloths are subject to great pressure, to remove the now perfumed oil.



Screw Press.

As we cannot give any general rule for working, without misleading the reader, we prefer explaining the process required for each when we come to speak of the individual flower or plant.

SECTION IV.

THE perfumes for the handkerchief, as found in the shops of Paris and London, are either simple or compound; the former are called extracts, *extraits*, *esprits*, or essences, and the latter *bouquets* or nosegays, which are mixtures of the extracts so compounded in quantity that no one flower or odour can be discovered as predominating over another; and when made of the delicate-scented flowers carefully blended, they produce an exquisite sensation on the olfactory nerve, and are therefore much prized by all who can afford to purchase them.

We shall first explain the mode for obtaining the simple extracts of flowers. This will be followed by the process for preparing ambergris, musk, and civet substances, which, though of animal origin, are of the utmost importance as forming a large part in the most approved bouquets; and we shall conclude this department of the art with recipes for all the fashionable bouquets and nosegays, the value of which, we doubt not, will be estimated according to the labour bestowed upon their analysis.

In order to render the work more easy of consultation, we have adopted the alphabetical arrangement in preference to a more scientific classification.

Among the collection of ottos of the East India

Company at the Exhibition of 1851, were several hitherto unknown in this country, and possessing much interest.

It is to be regretted, that no person having any *practical* knowledge of Perfumery was placed on the jury of Class IV. or XXIX. Had such been the case, the desires of the exhibitors would probably have been realised, and European perfumers benefited by the introduction of new odours from the East. Some of the ottos sent by a native perfumer of Benares were deemed worthy of honourable mention. Such as *Chumeylee*, *Beyla*, *Begla*, *Moteya*, and many others from the Moluccas, but without any information respecting them.

We are not going to speak of, perhaps, more than a tithe of the plants that have a perfume — only those will be mentioned that are used by the operative perfumer, and such as are imitated by him in consequence of there being a demand for the article, which circumstances prevent him from obtaining in its genuine state. The first that comes under our notice is —

ALLSPICE. — The odoriferous principle of allspice, commonly called pimento, is obtained by distilling the dried fruit, before it is quite ripe, of the *Eugenia pimenta* and *Myrtus pimenta* with water. It is thus procured as an essential oil; it is but little used in perfumery, and when so, only in combination with other spice oils for scenting soap; it is, however, very agreeable, and much resembles the smell of

eloves, and deserves more attention than it has hitherto received. Mixed in the proportion of three ounces of oil of allspice with one gallon of rectified spirit of wine, it forms what may be termed extract of allspice, which extract will be found very useful in the manufacture of low-priced bouquets.

ALMONDS.—

“Mark well the flow’ring almond in the wood;
 If od’rous blooms the bearing branches load,
 The glebe will answer to the sylvan reign,
 Great heats will follow, and large crops of grain.”

VIRGIL.

This perfume has been much esteemed for many ages. It may be procured by distilling the leaves of any of the laurel tribe, and the kernels of stone fruit; for trade purposes, it is obtained from the bitter almond, and exists in the skin or pellicle that covers the seed after it is shelled. In the ordinary way, the almonds are put into the press for the purpose of obtaining the mild or fat oil from the nut; the cake which is left after this process is then mixed with salt and water, and allowed to remain together for about twenty-four hours prior to distillation. The reason for moistening the cake is well understood by the practical chemist, and although we are not treating the subject of perfumery in a chemical sense, but only in a practical way, it may not be inappropriate here to observe, that the essential oil of almonds does not exist ready formed to any extent in the nut, but that it is produced by

a species of fermentation, from the amygdalin and emulsine contained in the almonds, together with the



Almond.

water that is added. Analogous substances exist in laurel leaves, and hence the same course is to be pursued when they are distilled. Some manufacturers put the moistened cake into a bag of coarse cloth, or spread it upon a sieve, and then force the steam through it; in either case, the essential oil of the almond rises with the watery vapour, and is condensed in the still-worm. Fourteen pounds of the cake yield about one ounce of essential oil. In this concentrated form, the odour of almonds is far from agreeable; but when diluted with spirit, in the proportion of about one and a half ounce of the oil to a gallon of spirit or alcohol, it is very pleasant.

The essential oil of almonds, enters into combination with soap, cold cream, and many other materials prepared by the perfumer; for which see their respective titles.

In experiments with this substance it must be

carefully remembered that it is exceedingly *poisonous*, and, therefore, great caution is necessary in its admixture with substances used as a cosmetic, otherwise dangerous results may ensue.

Artificial otto of Almonds, otherwise Miribane. — Five or six years ago, Mr. Mansfield of Weybridge, took out a patent for the manufacture of otto of almonds from benzole. (Benzole is obtained from tar oil.) His apparatus, according to the Report of the juries of the 1851 Exhibition, consists of a large glass tube in the form of a coil, which at the upper end divides into two tubes; each of which is provided with a funnel. A stream of nitric acid flows slowly into one of the funnels, and benzole into the other. The two substances meet at the point of union of the tubes, and a combination ensues with the evolution of heat. As the newly formed compound flows down through the coil it becomes cool, and is collected at the lower extremity; it then requires to be washed with water, and lastly with a dilute solution of carbonate of soda to render it fit for use." Nitro-benzole, which is the chemical name for this artificial otto of almonds, has a different odour to the true otto of almonds, but it can nevertheless be used for perfuming soap. Mr. Mansfield writes to me under date January 3rd, 1855:—“In 1851, Messrs. Gosnell, of Three King Court, began to make this perfume under my licence; latterly I withdrew the licence from them by their consent, and since then it is not made that I am aware of.” Not-

withstanding this remark of Mr. Mansfield, there is plenty of Miribane in the London market, and it is quite common in Paris.

ANISE. — The odorous principle is procured by distilling the seeds of the plant *Pimpinella anisum*; the product is the oil of aniseed of commerce. As it congeals at a temperature of about 50° Fahr., it is frequently adulterated with a little spermaceti, to give a certain solidity to it, whereby other cheaper essential oils can be added to it with less chance of detection. As the oil of aniseed is quite soluble in spirit, and the spermaceti insoluble, the fraud is easily detected.

This perfume is exceedingly strong, and is, therefore, well adapted for mixing with soap and for scenting pomatums, but does not do nicely in compounds for handkerchief use.

BALM, otto of Balm, called also oil of Melissa, is obtained by distilling the leaves of the *Melissa officinalis* with water; it comes from the still tap with the condensed steam or water, from which it is separated with the tap funnel. But it is very little used in perfumery, if we except its combination in *Aqua di Argento*.

BALSAM. — Under this title there are two or three substances used in perfumery, such as balsam of Peru, balsam of tolu, and balsam of storax (also called liquid amber). The first-named is procured from the *Myroxylon peruiferum*; it exudes from the tree when wounded, and is also obtained by boiling

down the bark and branches in water. The latter is the most common method of procuring it. It has a strong odour, like benzoin and vanilla mixed.

Balsam of tolu flows from the *Toluifera balsamum*. It resembles common resin (rosin); with the least warmth, however, it runs to a liquid, like brown treacle. The smell of it is particularly agreeable, and being soluble in alcohol, makes a good basis for a bouquet, giving in this respect a permanence of odour to a perfume which the simple solution of an oil would not possess. For this purpose all these balsams are very useful, though not so much used as they might be.

“ULEX has found that balsam of tolu is frequently adulterated with common resin. To detect this adulteration he pours sulphuric acid on the balsam, and heats the mixture when the balsam dissolves to a cherry-red fluid, without evolving sulphurous acid, but with the escape of benzoic or cinnamic acid, if no common resin is present. On the contrary, the balsam foams, blackens, and much sulphurous acid is set free, if it is adulterated with common resin.”—*Archives der Pharmacie*.

Balsam of storax, commonly called gum styrax, is obtained in the same manner, and possessing similar properties, with a slight variation of odour, is applicable in the same manner as the above.

They are all imported from South America, Chili, and Mexico, where the trees that produce them are indigenous.

The genuine balsam of Mecca (*Gum amyris opobalsam*) is both scarce and expensive. The kings of

Judah cultivated this shrub, but only to a very small extent. It will be interesting to learn, that a bottle of this extraordinary balsam is kept at the botanical garden at Paris, as an object of the rarest and highest value. What is generally sold by the name of Balsam of Mecca is merely the oil, obtained by boiling, from the seeds, stones, and branches of the tree. It is too rare to be purchased at any price, as is generally supposed to be. Josephus informs us that the Queen of Sheba brought it first to Judea, where balsam, myrrh, and incense, in the days of old, were to be seen used by the populace in abundance, almost daily. This is one of the many things which we "mourn for" in the "days gone by." The reason of its excessive scarcity is supposed to be owing to the destruction of Jerusalem: the Jews, actuated by despair and hatred, destroyed all the balsam plants. There are none now to be found in Palestine. Only one plantation is now known to furnish it, and that is in Arabia Petrea. The whole plantation only yields about three pounds annually, and it is monopolized by the Grand Seignior. This, of course, we can scarcely refrain from noticing without an expression of regret.

BAY, oil of sweet Bay, also termed essential oil of laurel-berries, is a very fragrant substance, procured by distillation from the berries of the bay laurel (*Laurus nobilis*). Though very pleasant, it is not much used.

BERGAMOT. — This most useful perfume is pro-

cured from the *Citrus bergamia*, by expression from the peel of the fruit. It has a soft sweet odour, too well-known to need description here. When new and good it has a greenish yellow tint, but loses its greenness by age, especially if kept in imperfectly corked bottles. It then becomes cloudy from the deposit of resinous matter, produced by the contact of the air, and acquires a turpentine smell.

It is best preserved in well-stoppered bottles, kept in a cool cellar, and in the dark ; light, especially the direct sunshine, quickly deteriorates its odour. This observation may be applied, indeed, to all perfumes, except rose, which is not so spoiled.

When bergamot is mixed with other essential oils, it greatly adds to their richness, and gives a sweetness to spice oils attainable by no other means, and such compounds are much used in the most highly-scented soaps. Mixed with rectified spirit in the proportions of about eight ounces of bergamot to a gallon, it forms what is called "extract of bergamot," and in this state is used for the handkerchief. Though well covered with extract of orris and other matters, it is the leading ingredient in Bayley and Blew's Ess. Bouquets. (See BOUQUETS.)

BENZOIN, also called Benjamin. — This is a very useful substance to perfumers. It exudes from the *Styrax benzoin* by wounding the tree, and drying, becomes a hard gum-resin. It is principally imported from Borneo, Java, Sumatra, and Siam. The best kind comes from the latter place, and used to be called

Amygdaloides, because of its being interspersed with several white spots, which resemble broken almonds.



Styrax Benzoin.

When heated, these white specks rise as a smoke, which is easily condensed upon paper. The material thus separated from the benzoin is called flowers of benzoin in commerce, and by chemists is termed benzoic acid. It has nearly all the odour of the resin from which it is derived; but which is due to a minute portion of a peculiar otto that rises in vapour with the acid. This otto of benzoin has not yet been isolated. When benzoic acid is prepared by the humid process, as is often done in the chemical laboratory, it has *no odour*. It may be, however, that the benzoic acid undergoes decomposition when prepared from the gum resin by sublimation, and thus produces the fragrant body which is wanting in that made in the wet way. This is probable, for gum

benzoin has but little or less odour than the acid sublimated from it.

Mr. W. Bastick recommends the following process for making flowers of benzoin. Coarsely powdered gum benzoin is to be strewed on the flat bottom of a round iron pot which has a diameter of nine inches, and a height of about two inches. On the surface of the pot is spread a piece of filtering paper, which is fastened to its rim by starch paste. A cylinder of very thick paper is attached by means of a string to the top of the iron pot. Heat is then applied by placing the pot on a plate covered with sand, over the mouth of a furnace. It must remain exposed to a gentle fire from four to six hours. About an ounce and a half of benzoic acid is obtained from twelve ounces of gum benzoin by the first sublimation. As the gum is not exhausted by the first operation, it may be bruised when cold and again submitted to the action of heat, when a fresh portion of benzoic acid will sublime from it. This acid thus obtained is not perfectly pure and white, and Dr. Mohr states that it is a question, in a medicinal and perfumery point of view, whether it is so valuable when perfectly pure, as when it contains a small portion of a fragrant volatile oil which rises with it from the gum in the process of sublimation.

The London Pharmacopœia directs that it shall be prepared by sublimation, and does not prescribe that it shall be free from this oil, to which it principally owes its agreeable odour.

By the second sublimation the whole of the benzoic acid is not volatilised. What remains in the resin may be separated by boiling it with caustic lime, and precipitating the acid from the resulting benzoate of lime with hydrochloric acid. Benzoic acid can be obtained also in the wet way, and the resin yields a greater product in this process than in the former; yet it has a less perfumery value, because it is free from the volatile oil which, as above stated, gives it its peculiar odour. The wet method devised by Scheele is as follows:—Make one ounce of freshly burnt lime into a milk with from four to six ounces of hot water. To the milk of lime, four ounces of powdered benzoin and thirty ounces of water are to be added, and the mixture boiled for half an hour, and stirred during this operation, and afterwards strained through linen. The residue must be a second time boiled with twenty ounces of water and strained, and a third time with ten ounces; the fluid products must be mixed and evaporated to one-fourth of their volume, and sufficient hydrochloric acid added to render them slightly acid. When quite cold, the crystals are to be separated from the fluid by means of a strainer, upon which they are to be washed with cold water, and pressed, and then dissolved in hot distilled water, from which the crystals separate on cooling. When hydrochloric acid is added to a cold concentrated solution of the salts of benzoic acid, it is precipitated as a white powder. If the solution of the salts of this acid is too dilute and warm, none

or only a portion of the benzoic acid will be separated. However, the weaker the solution is, and the more slowly it is cooled, the larger will be the crystals of this acid. In the preparation of this acid in the wet way, lime is to be preferred to every other base, because it forms insoluble combinations with the resinous constituents of the benzoin, and because it prevents the gum resin from conglomerating into an adhesive mass, and also because an excess of this base is but slightly soluble.

“The best Benzoin is obtained in Siam by incisions made in the trunk of the tree, after it has attained the age of five or six years. The resin is white, and transparent at first. About three pounds are given by each tree for about six years. It forms an article of export from Siam. From Singapore, the exports in 1852 were to the extent of 1282 piculs, and 168 piculs in 1853. Java imported last year Benjamin of the value of 176,182 florins. The different varieties bear a price proportioned to their goodness; the finest quality used to range from 10*l.* to 20*l.* per picul of 133lbs. Benzoin is the frankincense of the far East, and has long been used for incense in the Roman Catholic, the Hindu, Mahometan, and Budhistic temples, and probably in the Israelitish worship. Wealthy Chinese fumigate their houses with its grateful odour.”—*Mr. Simmons : read at the Society of Arts.*

The extract, or tincture of benzoin, forms a good basis for a bouquet. Like balsam of tolu, it gives permanence and body to a perfume made with an essential oil in spirit.

The principal consumption of benzoin is in the manufacture of pastilles (see PASTILLES), and for the preparation of fictitious vanilla pomade. (See POMATUMS.)

BRIAR (SWEET-). See EGLANTINE.

CARAWAY. — This odoriferous principle is drawn by distillation from the seeds of the *Carum Carui*. It has a very pleasant smell, quite familiar enough without description. It is well adapted to perfume soap, for which it is much used in England, though rarely if ever on the Continent; when dissolved in spirit it may be used in combination with oil of lavender and bergamot for the manufacture of cheap essences, in a similar way to cloves. (See CLOVES.) If caraway seeds are ground, they are well adapted for mixing to form sachet powder. (See SACHETS.)

CASCARILLA. — The bark is used in the formation of Frangipanni Incense and also enters into the composition known as *Eau à Brûler*, for perfuming apartments, to which we refer.

The bark alone of this plant is used by the manufacturing perfumer. The *Cascarilla gratissima* is however so fragrant that, according to Burnett, its leaves are gathered by the Koras of the Cape of Good Hope as a perfume. It behoves perfumers, therefore, who are on the look-out for novelties, to obtain these leaves and ascertain the result of their distillation.

Messrs. Herring and Co., some years ago, drew the oil of cascarilla, but it was only offered to the trade as a curiosity.

The Cascarilla (meaning “ little Bark,” in Spanish,) of commerce is derived, according to Sir

W. Hooker, from the *Croton fragrans*, a native plant of South America.



Camphor Tree.

CAMPBOR. — This beautiful and fragrant substance is produced by several plants, particularly *Dryobalanops Camphora*, the Camphor tree of Sumatra and Japan. The kind, however, mostly found in commerce is derived from the *Laurus Camphora*, or, Camphor laurel of the island of Formosa, carried thence to Canton, from which port the markets of the world are supplied. The camphor exists naturally within the tree ready formed: on splitting the wood, it is found, in masses twelve to eighteen inches long, between the bark and the stem and in the pith. There is a race of men called Nyr-Cappoors, or Camphor seers, who pretend to have the power of distinguishing the most profitable trees to fall. Many trees are, however, cut down at their insti-

gation, without having any cryptæ of camphor in them. Every part of the *Laurus Camphora* contains camphor, which is extracted by chopping the branches and boiling them in water. The camphor rises to the surface, and becomes solid as the water cools: in some instances, the boiler in which the operation is conducted is covered with an earthen dome lined with rice-straw; as the water boils, the camphor rises with the steam, and attaches itself to the straw, from which it is afterwards picked, and then packed for exportation.

The camphor as found in the shops in England is “refined,” and is not in the original condition in which it is brought to Europe. The purification or refining of camphor was at one time held as a monopoly at Venice, but is now done in all the large cities of Europe. The process is simple, and consists of mixing the imported camphor with a little lime, and subjecting it to a heat sufficient to convert it to vapour, which readily condenses into the form of the receiver. The odour of camphor is very characteristic, and to the majority of people very agreeable. It has the reputation of being highly prophylactic, and to this end is worn about the person in time of sickness; from its reputed antiseptic qualities, it is extensively used in the manufacture of dentifrices, soap, aromatic vinegars, and other toilet appendages.

CASSIA. — The essential oil of cassia is procured by distilling the outer bark of the *Laurus*

Cassia. 1 cwt. of bark yields rather more than three quarters of a pound of oil; it has a pale yellow colour; in smell it much resembles cinnamon, although very inferior to it. It is principally used for perfuming soap, especially what is called "military soap," as it is more aromatic or spicy than flowery in odour; it therefore finds no place for handkerchief use.

CASSIE. —

"The short narcissus and fair daffodil,
Pansies to please the sight, and *cassie* sweet to smell."

DRYDEN'S *Virgil*.

This is one of those fine odours which enter into the composition of the best handkerchief bouquets. When smelled at alone, it has an intense violet odour, and is rather sickly sweet.

It is procured by maceration from the *Acacia farnesiana*. Purified fat is melted in the *Bain Marie*, into which the flower heads are thrown, and left to digest for several hours; the spent flowers are then removed, and fresh are added, eight or ten times, until sufficient richness of perfume is obtained. As many flowers are used as the fluid grease will cover, when they are put into it.

After being strained, and the pomade has been kept at a heat sufficient only to retain its liquidity, all impurities will subside, by standing for a few days. Finally cooled, it is the *cassie* pomade of commerce. The *Huile de Cassie*, or fat-oil of *cassie*, is prepared in a similar manner, substituting olive oil,



Acacia farnesiana (flower heads, natural size).

or almond oil, in place of suet. Both these preparations are obviously only a solution of the true essential oil of cassie flowers in the neutral fatty body. Europe may shortly be expected to import a similar scented pomade from South Australia, derived from the Wattle, a plant that belongs to the same genus as the *A. farnesiana*, and which grows most luxuriantly in Australia. Mutton fat being cheap, and the wattle plentiful, a profitable trade may be anticipated in curing the flowers, &c.

To prepare the *extract of cassie*, take six pounds of No. 24. (best quality) cassie pomade, and place

upon it one gallon of the best rectified spirit, as sent out by Bowerbank, of Bishopsgate. After it has digested for three weeks or a month, at a summer heat, it is fit to draw from the pomatum, and, if good, has a beautiful olivaceous green colour and rich flowery smell of the cassie blossom. All extracts made by this process, give a more natural smell of the flowers to the result, than by merely dissolving the essential oil (procured by distillation) in the spirit; moreover, where the odour of the flower exists in only very minute quantities, as in the present instance, and with violet, jasmine, &c., it is the only practical mode of proceeding.

In this and all other similar cases, the pomatum must be cut up into very small pieces, after the domestic manner of "chopping suet," prior to its being infused in the alcohol. The action of the mixture is simply a change of place in the odoriferous matter, which leaves the fat body by the superior attraction, or affinity, as the chemists say, of the spirits of wine, in which it freely dissolves.

The major part of the extract can be poured or drawn off the pomatum without trouble, but it still retains a portion in the interstices, which requires time to drain away, and this must be assisted by placing the pomatum in a large funnel, supported by a bottle, in order to collect the remainder. Finally, all the pomatum, which is now called *washed pomatum*, is to be put into a tin or copper can, which can must be set in hot water, for the purpose of melt-

ing its contents; when the pomatum thus becomes liquefied, any extract that is still in it rises to the surface, and may be skimmed off; or, when the pomatum becomes cold, it can be poured from it.

The washed pomatum is preserved for use in the manufacture of dressing for the hair, for which purpose it is exceedingly well adapted, on account of the purity of the grease from which it was originally prepared, but more particularly on account of a certain portion of odour which it still retains; and were it not used up in this way, it would be advisable to put it for a second infusion in spirit, and thus a weaker extract could be made serviceable for lower priced articles.

I cannot leave cassie without recommending it more especially to the notice of perfumers and druggists, as an article well adapted for the purpose of the manufacture of essences for the handkerchief and pomades for the hair. When diluted with other odours, it imparts to the whole such a true flowery fragrance, that it is the admiration of all who smell it, and has not a little contributed to the great sale which certain proprietary articles have attained.

We caution the inexperienced not to confound cassie with cassia, which has a totally different odour. See ACACIA POMADE.

CEDAR wood now and then finds a place in a perfumer's warehouse; when ground, it does well to form a body for sachet powder. Slips of cedar wood are sold as matches for lighting lamps, because, while

burning, an agreeable odour is evolved; some people use it also, in this condition, distributed among clothes in drawers to “prevent moth.” On distillation it yields an essential oil that is exceedingly fragrant, and which is used extensively for scenting what is called cold cream soap.

LEBANON CEDAR WOOD. (*For the Handkerchief.*)

Otto of cedar	-	-	-	-	1 oz.
Rectified spirit	-	-	-	-	1 pint.
Esprit rose trip	-	-	-	-	$\frac{1}{4}$ pint.

Since the publication of the first edition of this work, otto of cedar wood, which was very scarce, has been sent extensively into the market. Messrs. Hodgkinson and Co., of Snowhill, have produced 28 ounces from the hundredweight of shavings, being the refuse of the pencil-makers. The pencil cedar is the “Virginian” or American cedar, *Juniperus virginiana*. The true Lebanon cedar, *Cedrus Libani*, and from which the handkerchief perfume is named! yields a very indifferent otto and odour to the American plant. The “Cedars of Lebanon” are so familiar, however, that perfumers could not afford to change the title of the scent they make, for the red wood of the West which resembles it somewhat in fragrance.

The Tincture of Cedar smells agreeably of the wood, from which it can readily be made by steeping the cedar wood in proof spirit. Its crimson colour, however, prohibits it from being used for the hand-

kerchief. It forms an excellent tincture for the teeth, and is the basis of the celebrated French dentifrice "eau Botot."

CEDRAT. — This perfume is procured from the rind of the citron fruit (*Citrus medica*), both by distillation and expression; it has a very beautiful lemony odour, and is much admired. It is principally used in the manufacture of essences for the handkerchief, being too expensive for perfuming grease or soap. What is called extract of cedrat is made by dissolving two ounces of the above essential oil of citron in one pint of spirits, to which some perfumers add half an ounce of bergamot.

CINNAMON. — Several species of the plant *Laurus Cinnamomum* yield the cinnamon and cassia of commerce. Its name is said to be derived from *China Amomum*, the bark being one of the most valued spices of the East. Perfumers use both the bark and the oil, which is obtained by distillation from it. The ground bark enters into the composition of some pastilles, tooth powders, and sachets. The essential oil of cinnamon is principally brought to this country from Ceylon; it is exceedingly powerful, and must be used sparingly. In such compounds as cloves answer, so will cinnamon.

Artificial preparation of oil of Cinnamon. — Some years since Strecker showed that styrene, which is obtained when styracine is treated with potash, is the alcohol of cinnamic acid. Wolff has converted this alcohol, by oxidising agents, into cin-

amic acid. The author has now proved that under the same conditions by which ordinary alcohol affords aldehyde, styrene affords the aldehyde of cinnamic acid, that is, oil of cinnamon. It is only necessary to moisten platinum black with styrene, and let it remain in the air some days, when by means of the bisulphate of potash the aldehyde double compound may be obtained in crystals, which should be washed in ether. By the addition of diluted sulphuric acid, the aldehyde of cinnamic acid is afterwards procured pure. These crystals also dissolve in nitric acid, and then form after a few moments crystals of the nitrate of the hyduret of cinnamyle. The conversion of styrene into the hyduret of cinnamyle by the action of the platinum black is shown by the following equation: $C_{18} H_{10} O_2 + 2 O = C_{18} H_8 O_2 + 2 HO$.— *Comptes Rendus*.

CITRON.—

“Sharp-tasted citron, Median climes produce;
Large is the plant, and like a laurel grows;
And, did it not a *different scent* disclose,
A laurel were.” — VIRGIL, *Georgics*, II. 180.

On distilling the flowers of the *Citrus medica*, a very fragrant oil is procured, which is a species of neroli, and is principally consumed by the manufacturers of Hungary water.

CITRONELLA.—Under this name there is an oil in the market, chiefly from Ceylon. It is procured by distilling the leaves of the *Andropogon Schœnanthus* which grows wild, and is very abundant in

Ceylon. In the neighbourhoods of Galle and of Colombo, in that island, large tracts of land are under cultivation of this plant, for the express purpose of procuring the odoriferous principle.

The average export of Citronella from the port of Colombo is about 4000 lbs. annually. Mr. Thwaites, of the Royal Botanic Gardens, has kindly promised to send me growing plants of the Citronella, which I shall deposit at Kew, or in Regent's Park Gardens, as soon as they come to hand.*

Citronella being cheap, (the export price at Colombo is 4s. 1d. per pound!), it is extensively used for perfuming soap. What is now extensively sold as "honey" soap is a fine yellow soap slightly perfumed with this oil. Some few use it for scenting grease, but it is not much admired in that way.

CLOVES.—Every part of the clove plant (*Caryophyllus aromaticus*) abounds with aromatic oil, but it is most fragrant and plentiful in the unexpanded flower-bud, which are the cloves of commerce. Cloves have been brought into the European market for more than 2000 years. The plant is a native of the Moluccas and other islands in the Chinese seas. "The average annual crop of cloves," says Burnett, "is, from each tree, 2 or 2½ lbs.; but a fine tree has been known to yield 125 lbs. of this spice in a single season, and as 5000 cloves only weigh one pound, there must have been at least 625,000 flowers upon this single tree."

* Letter dated August 14. 1856.

The otto of cloves may be obtained by expression from the fresh flower-buds, but the usual method of



Clove.

procuring it is by distillation, which is carried on to a very great extent in this country. Few essential oils have a more extensive use in perfumery than that of cloves; it combines well with grease, soap, and spirit, and, as will be seen in the recipes for the various bouquets given hereafter, it forms a leading feature in some of the most popular handkerchief essences, *Rondeletia*, the *Guard's Bouquet*, &c., and will be found where least expected. For essence of cloves, dissolve oil of cloves in the proportion of four ounces of oil to one gallon of spirit.

DILL.—Perfumers are now and then asked for “dill-water;” it is, however, more a druggist’s article than a perfumer’s, as it is more used for its medicinal qualities than for its odour, which, by the way, is rather pleasant than otherwise. Some ladies use a mixture of half dill-water and half rose-water, as a simple cosmetic, “to clear the complexion.”

The oil of dill is procured by submitting the crushed fruit of dill (*Anethum graveolens*) with water to distillation. The oil floats on the surface of the distillate, from which it is separated by the funnel in the usual manner; after the separation of the oil, the "water" is fit for sale. Oil of dill may be used with advantage, if in small proportions, and mixed with other oils, for perfuming soap.

EGLANTINE, or SWEET-BRIAR, notwithstanding what the poet Robert Noyes says—

" In fragrance yields,
Surpassing citron groves or spicy fields,"

does not find a place in the perfumer's "scent-room" except in name. This, like many other sweet-scented plants, does not repay the labour of collecting its odour. The fragrant part of this plant is destroyed more or less under every treatment that it is put to, and hence it is discarded. As, however, the article is in demand by the public, a species of fraud is practised upon them, by imitating it thus:—

Imitation Eglantine, or Essence of Sweet-Briar.—

Spirituos extract of French rose pomatum	-	1	pint.
" " cassie	-	-	$\frac{1}{4}$ "
" " Fleur d'orange	-	-	$\frac{1}{4}$ "
Esprit de rose	-	-	$\frac{1}{4}$ "
Oil of neroli	-	-	$\frac{1}{2}$ drachm.
Oil of lemon-grass (verbena oil)	-	-	$\frac{1}{2}$ "

ELDER (*Sambucus nigra*).—The only preparation of this plant, for its odorous quality, used by the per-

fumer, is elder-flower water. To prepare it, take nine pounds of elder-flowers, free from stalk, and introduce it to the still with four gallons of water; the first three gallons that come over is all that need be preserved for use; one ounce of rectified spirit should be added to each gallon of "water" distilled, and when bottled it is ready for sale.

KREMBS recommends the following process for making a concentrated elder-flower water, from which he states the ordinary water can be extemporaneously prepared, of excellent quality, and of uniform strength:— 2 lbs. of the flowers are to be distilled with water until that which passes into the receiver has lost nearly all perfume. This will generally happen when from 15 to 18 pounds have passed over. To the distillate, 2 lbs. of alcohol are to be added, and the mixture distilled until about 5 lbs. are collected. This liquor contains all the odour of the flowers. To make the ordinary water, 2 ounces of the concentrated water are to be added to 10 ounces of distilled water. — *Buchner's Report.*

Other preparations of elder-flowers are made, such as milk of elder, extract of elder, &c., which will be found in their proper place under Cosmetics. Two or three new materials made from this flower will also be given hereafter, which are likely to meet with a very large sale on account of the reputed cooling qualities of the ingredients; of these we would call attention more particularly to cold cream of elder-flowers, and to elder oil for the hair.

The preparations of the elder-flowers, if made according to the Pharmacopœias, are perfectly useless, as the forms therein given show an utter want of knowledge of the properties of the materials employed.

FENNEL (*Fœniculum vulgare*).—Dried fennel herb, when ground, enters into the composition of some sachet powders. The oil of fennel, in conjunction with other aromatic oils, may be used for perfuming soap. It is procurable by distillation.

FLAG (SWEET) (*Acorus Calamus*).—The roots, or rhizome, of the sweet flag, yield by distillation a pleasant-smelling oil; 1 cwt. of the rhizome will thus yield one pound of oil. It can be used according to the pleasure of the manufacturer in scenting grease, soap, or for extracts, but requires other sweet oils with it to hide its origin.

FRANGIPANNI.—This plant, which is said to yield the “ eternal perfume ” so popular at the present day, is a native of the West India Islands. In Antigua and at St. Domingo it grows in great abundance. W. Tweedie, Esq., of the latter place, promises to send the author some growing plants; and in the next edition of this work, we shall give an engraving, and particulars of its growth.

GERANIUM (*Pelargonium odoratissimum*, rose-leaf geranium).—The leaves of this plant yield by distillation a very agreeable rosy-smelling otto, so much resembling real otto of rose that it is used very extensively for the adulteration of that valuable scent,

and is grown very largely for that express purpose. It is principally cultivated in the south of France, and in Turkey (by the rose-growers). In the department of Seine-et-Oise, at Montfort-Lamaury, in France, hundreds of acres of it may be seen growing. One hundredweight of leaves will yield about two ounces of essential oil. Used to adulterate otto of rose, it is in its turn itself adulterated with ginger-grass oil (*Andropogon*), and thus formerly was very difficult to procure genuine; on account of the increased cultivation of the plant, it is now, however, easily procured pure. Some samples are greenish-coloured, others nearly white, but we prefer that of a brownish tint.

When dissolved in rectified spirit, in the proportion of about four ounces to the gallon, it forms the *Extract of Rose-leaf Geranium* of the shops. — A word or two is necessary about the oil of geranium, as much confusion is created respecting it, in consequence of there being an oil under the name of geranium, but which in reality is derived from one of the *Andropogons*, cultivated in the Moluccas. This said andropogon (geranium!) oil can be used to adulterate the true geranium, and hence we suppose its nomenclature in the drug markets. The genuine rose-leaf geranium otto fetches about 12s. per ounce, while the andropogon oil is not worth more than that sum per pound. And we may observe here, that the perfuming essential oils are best purchased through the wholesale perfumers, as from the nature

of their trade they have a better knowledge and means of obtaining the real article than the drug-broker. On account of the pleasing odour of the true oil of rose-leaf geranium, it is a valuable article for perfuming many materials, and appears to give the public great satisfaction.

HELIOTROPE. — Either by maceration or enfleurage with clarified fat, we may obtain this fine odour from the flowers of the *Heliotropium peruvianum* or *H. grandiflorum*. Exquisite as the odour of this plant is, at present it is not applied to use by the manufacturing perfumer. This we think rather a singular fact, especially as the perfume is powerful and the flowers abundant. We should like to hear of some experiments being tried with this plant for procuring its odour in this country, and for that purpose now suggest the mode of operation which would most likely lead to successful results. For a small trial in the first instance, which can be managed by any person having the run of a garden, we will say, procure an ordinary glue-pot now in common use, which melts the material by the boiling of water; it is in fact a water bath, in chemical parlance — one capable of holding a pound or more of melted fat. At the season when the flowers are in bloom, obtain a pound of fine lard, melt the lard and strain it through a close hair-sieve, allow the liquefied fat, as it falls from the sieve, to drop into cold spring water; this operation granulates and washes the blood and membrane from it. In order to start with

a perfectly inodorous grease, the melting and granulation process may be repeated three or four times, using a pinch of salt and a pinch of alum in each water; it is then to be washed five or six times in plain water; finally, remelt the fat and cast it into a pan to free it from adhering water.

Now put the clarified lard into the macerating pot, and place it in such a position near the fire of the greenhouse, or elsewhere, that will keep it warm enough to be liquid; into the fat throw as many flowers as you can, and there let them remain for twenty-four hours; at this time strain the fat from the spent flowers and add fresh ones; repeat this operation for a week: we expect at the last straining the fat will have become very highly perfumed, and when cold may be justly termed *Pommade à la Héliotrope*.

The cold pomade being chopped up, like suet for a pudding, is now to be put into a wide-mouthed bottle, and covered with spirits as highly rectified as can be obtained, and left to digest for a week or more; the spirit then strained off will be highly perfumed; in reality it will be *extract of heliotrope*, a delightful perfume for the handkerchief. The rationale of the operation is simple enough; the fat body has a strong affinity or attraction for the odorous body, or essential oil of the flowers, and it therefore absorbs it by contact, and becomes itself perfumed. In the second operation, the spirit has a much greater attraction for the fragrant principle

than the fatty matter; the former, therefore, becomes perfumed at the expense of the latter. The same experiment may be repeated with almond oil substituted for the fat, or the process of enfleurage may be adopted.

The experiment here hinted at may be varied with any flowers that there are to spare; indeed, by having the macerating bath larger than was mentioned above, an excellent *millefleur* pomade and essence might be produced from every conservatory in the kingdom, and thus we may receive another enjoyment from the cultivation of flowers beyond their beauty of form and colour.

We hope that those of our readers who feel inclined to try experiments of this nature will not be deterred by saying, "They are not worth the trouble." It must be remembered, that very fine essences realise in the London perfumery warehouses 16s. per pint of 20 ounces, and that fine *flower-scented* pomades fetch the same sum per pound. If the experiments are successful they should be published, as then we may hope to establish a new and important manufacture in this country. But we are digressing.

The odour of heliotrope resembles a mixture of almonds and vanilla, and is well imitated thus: —

Extract of Heliotrope.

Spirituous extract of vanilla	-	-	½ pint.
" " French rose pomatum	-	-	¼ "
" " orange-flower pomatum	-	-	2 oz.
" " ambergris	-	-	1 oz.
Essential oil of almonds	-	-	5 drops.

A preparation made in this manner under the name of *Extrait de Héliotrope* is that which is sold in the shops of Paris and London, and is really a very nice perfume, passing well with the public for a genuine extract of heliotrope.

HONEYSUCKLE or WOODBINE: —

“Copious of flower the woodbine, pale and wan,
But well compensating her sickly looks
With never-cloying odours.”

What the poet Cowper here says is quite true, nevertheless, it is a flower that is not used in practical perfumery, though there is no reason for abandoning it. The experiments suggested for obtaining the odour of Heliotrope and Millefleur (thousand flowers) are also applicable to this, as also to Hawthorn. A good IMITATION OF HONEYSUCKLE is made thus: —

Spirituos extract of rose pomatum	-	-	1 pint.
„ „ violet	-	-	1 „
„ „ tubereuse	-	-	1 „
Extract of vanilla	-	-	$\frac{1}{4}$ „
„ tolu	-	-	$\frac{1}{4}$ „
Otto neroli	-	-	10 drops.
„ almonds	-	-	5 „

The prime cost of a perfume made in this manner would probably be too high to meet the demand of a retail druggist; in such cases it may be diluted with rectified spirit to the extent “to make it pay,” and will yet be a nice perfume. The formula generally given herein for odours is in anticipation that

when bottled they will retail for at least eighteen-pence the fluid ounce! which is the average price put on the finest perfumery by the manufacturers of London and Paris.

HOVENIA.—A perfume under this name is sold to a limited extent, but if it did not smell better than the plant *Hovenia dulcis* or *H. inæqualis*; a native of Japan, it would not sell at all. The article in the market is made thus:—

Imitation Essence of Hovenia.

Rectified spirit	-	-	-	-	1 quart.
Rose-water	-	-	-	-	$\frac{1}{2}$ pint.
Otto lemons	-	-	-	-	$\frac{1}{2}$ oz.
Otto of rose	-	-	-	-	1 drachm.
„ cloves	-	-	-	-	$\frac{1}{2}$ „
„ neroli	-	-	-	-	10 drops.

First dissolve the ottos in the spirit, then add the rose-water. After filtration it is ready for sale. When compounds of this kind do not become bright by passing through blotting-paper, the addition of a little carbonate of magnesia prior to filtering effectually clears them. The water in the above recipe is only added in order that the article produced may be retailed at a moderate price, and would, of course, be better without that “universal friend.”

JASMINE. —

“Luxuriant above all,
The jasmine throwing wide her elegant sweets.”

This flower is one of the most prized by the perfumer. Its odour is delicate and sweet, and so pecu-

liar that it is without comparison, and as such cannot be imitated. When the flowers of the *Jasminum odoratissimum* are distilled, repeatedly using the water of distillation over fresh flowers, the essential oil of jasmine may be procured. It is, however, exceedingly rare, on account of the enormous cost of production. There was a fine sample of six ounces exhibited in the Tunisian department of the Crystal Palace, the price of which was 9*l.* the fluid ounce! The plant is the Yasmyn of the Arabs, from which our name is derived.

The cultivation of the jasmine is very extensive at Cannes (du Département du Var) in the south of France. The manufacturing perfumers there do not grow all the jasmine they consume, but are supplied with small lots of flowers, from various cottagers, who have little plots of the plants, every morning in the season. The cost of these flowers is from two to three francs the kilogramme, equal to about 1*s.* 4*d.* the pound; in this way the principal houses receive daily from one to two hundredweight of blossoms! The cultivated jasmine differs from that jasmine we have in England, inasmuch as the blossoms are four times the size of the British or wild jasmine; the plant also grows more like a small bush, and, not being a creeper, requires no supports. Its growth and cultivation resemble very much that of English lavender.

In the perfumer's laboratory, the method of obtaining the odour is by absorption, or, as the French

term it, *enfleurage* ; that is, by spreading a mixture of pure lard and beef suet on a glass tray (*châssis en verre*), and sprinkling the fresh-gathered flowers all over it, leaving them to stand a day or so, and repeating the operation with fresh flowers during the whole time the jasmine plant is in blossom, which is for more than six weeks ; the grease absorbs the odour. Finally, the pomade is scraped off the glass melted at as low a temperature as possible, and strained.

Oils strongly impregnated with the fragrance are also prepared much in the same way. Cotton cloths (*molleton de coton*), previously steeped in olive oil, are covered with jasmine flowers, which is repeated several times ; finally, the cotton cloths are squeezed under a press. The jasmine oil thus produced is the *Huile antique au jasmin* of the French houses. (See ENFLEURAGE, page 36.)

The Extract of Jasmine is prepared by pouring rectified spirit on the jasmine pomade or oil, and allowing them to remain together for a fortnight, at a summer heat. The best quality extract requires two pounds of pomatum to every quart of spirit. The same can be done with the oil of jasmine. If the pomade is used, it must be cut up fine previously to being put into the spirit ; if the oil is used, it must be shaken well together every two or more hours, otherwise, on account of its specific gravity, the oil separates, and but little surface is exposed to the spirit. After the extract is strained off, the “washed”

pomatum or oil is still useful, if remelted, in the composition of pomatum for the hair, and gives more satisfaction to a customer than any of the “creams and balms,” &c., &c., made up and scented with essential oils; the one smells of the flower, the other “a nondescript.”

The extract of jasmine enters into the composition of a great many of the most approved handkerchief perfumes sold by the English and French perfumers. The extract of jasmine made in England is much



Gathering Jasmine.

finer than the French, on account of the inodorous quality of the British spirit. Extract of jasmine is sold for the handkerchief often pure, but is one of those scents which, though very gratifying at first, becomes what people call “sickly” after exposure to the oxidizing influence of the air, but if judiciously

mixed with other perfumes of an opposite character is sure to please the most fastidious customer.

JONQUIL.—The scent of the jonquil is very beautiful; for perfumery purposes it is however but little cultivated in comparison with jasmine and tubereuse. It is prepared exactly as jasmine. The Parisian perfumers sell a mixture which they call “extract of jonquil.” The plant, however, only plays the part of a godfather to the offspring, giving it its name. The so-called jonquil is made thus:—

Imitation Extract of Jonquil.

Spirituous extract of jasmine pomade	-	1 pint.
” ” tubereuse ”	-	1 ”
” ” fleur d’orange	-	$\frac{1}{2}$ ”
Extract of vanilla	-	2 fluid oz.

True Extract of Jonquil.

Jonquil pomade	-	8 lbs.
Spirit (60 over proof)	-	1 gallon.

Let it stand one month.

LAUREL.—By distillation from the leaves of the *Prunus Laurocerasus* or Cherry laurel, an oil and perfumed water are procurable, of a very beautiful and fragrant character. Commercially, however, it is disregarded; as from the similarity of odour to the oil distilled from the bitter almond, it is rarely, if ever, used by the perfumer, the latter being more economical.

LAVENDER.—

“In each bright drop there is a spell,
’Tis from the soil we love so well,
From English gardens won.”

The climate of England appears to be better adapted for the perfect development of this fine old favourite perfume than any other on the globe. "The ancients," says Burnett, "employed the flowers and the leaves to aromatise their baths, and to give a sweet scent to water in which they washed; hence the generic name of the plant, *Lavandula*."

Lavender is grown to an enormous extent at Mitcham, in Surrey, and at Hitchin, in Herts, by Mr. Perks, which are the places of its production in a commercial point of view. Very large quantities are also grown in France. What is called the Alpine lavender of France is remarkably good; but the fine odour of the British produce realises in the market four times the price of that of continental growth. Burnett says that the oil of *Lavandula Spica* is more pleasant than that derived from the other species; but this statement must not mislead the purchaser to buy the French spike lavender, as it is not worth a tenth of that derived from the *Lavandula vera*. Half a hundredweight of good lavender flowers yields, by distillation, from fourteen to sixteen ounces of essential oil.

Lavandula vera is a native of Persia, the Canaries, Barbary, and the south of Europe, from the last of which it is said to have been first brought to England, where, finding a congenial soil, and being carefully cultivated, it yields an essential oil, or *otto*, very far superior to that produced from it in its original places of growth. The peculiar

qualities of most plants are susceptible of change, and in many instances of improvement, by cultivation, but none perhaps more so than this. It is not even in all parts of this country that it can be grown with success, and for many years it was supposed that it would only come to perfection in the neighbourhood of Mitcham, in Surrey; but it has, within the last half century, been found that a soil and climate still more suited to its growth exists near Hitchin, in Hertfordshire. There the finest otto is now produced from its flowers, by Mr. S. Perks, from whom we have received the following account of the mode of its cultivation and treatment.

“The ground for a plantation of lavender should not be surrounded by high hedges, or in the immediate neighbourhood of any trees, which tend to retain too much moisture upon the plants, and thus cause the spring frost to cut off the flowers, but should be as much exposed to the sun as possible.

“In October, a large number of slips from the old plants are placed in previously prepared beds, where they are allowed to remain for twelve months, during which time they are carefully clipped. When a year old, they are planted out (in fine weather) in rows four feet apart, with a space of three feet from plant to plant, but are not allowed to flower, the clipping being still continued, in order to strengthen them, which object is further promoted by a regular supply of short manure to the roots. If this cannot

be procured in sufficient quantity, its place may be supplied by superphosphate of lime, which greatly improves the appearance of the plant, and causes it also to produce finer flowers.

“ The usual mode of procuring the otto is to put the flowers and stalks into a still with sufficient water, and thus draw off the oil; but I have found by experiment that very little is produced from the stalks, and that little of inferior quality. My present practice is therefore to employ only the flowers, which are stripped from the stalks previously to the distillation; and though this is necessarily a more expensive way of proceeding, the superior quality of the product enhances its value in an equal degree, whilst the loss in quantity is very small. The aroma of the otto produced by this process is so far superior to that of any other as to be at once perceptible to every one accustomed to the use of an inferior kind, and even to those who may be said to have an entirely uneducated sense of smelling. It is, in fact, a pure otto, and when suitably combined with other appropriate materials, produces ‘Lavender Water’ of the most exquisite fragrance that has hitherto been made.”

All the inferior descriptions of oil of lavender are used for perfuming soaps and greases; but the best, that obtained from the Mitcham and Hitchin lavender, is entirely used in the manufacture of what is called lavender water, but which, more properly, should be called essence or extract of lavender, to be

in keeping with the nomenclature of other essences prepared with spirit.

The number of formulæ published for making a liquid perfume of lavender is almost endless; but the whole of them may be resolved into, essence of lavender, simple; essence of lavender, compound; and lavender water.

There are two methods of making essence of lavender: — 1. By distilling a mixture of essential oil of lavender and rectified spirit; and the other — 2. by merely mixing the oil and the spirit together.

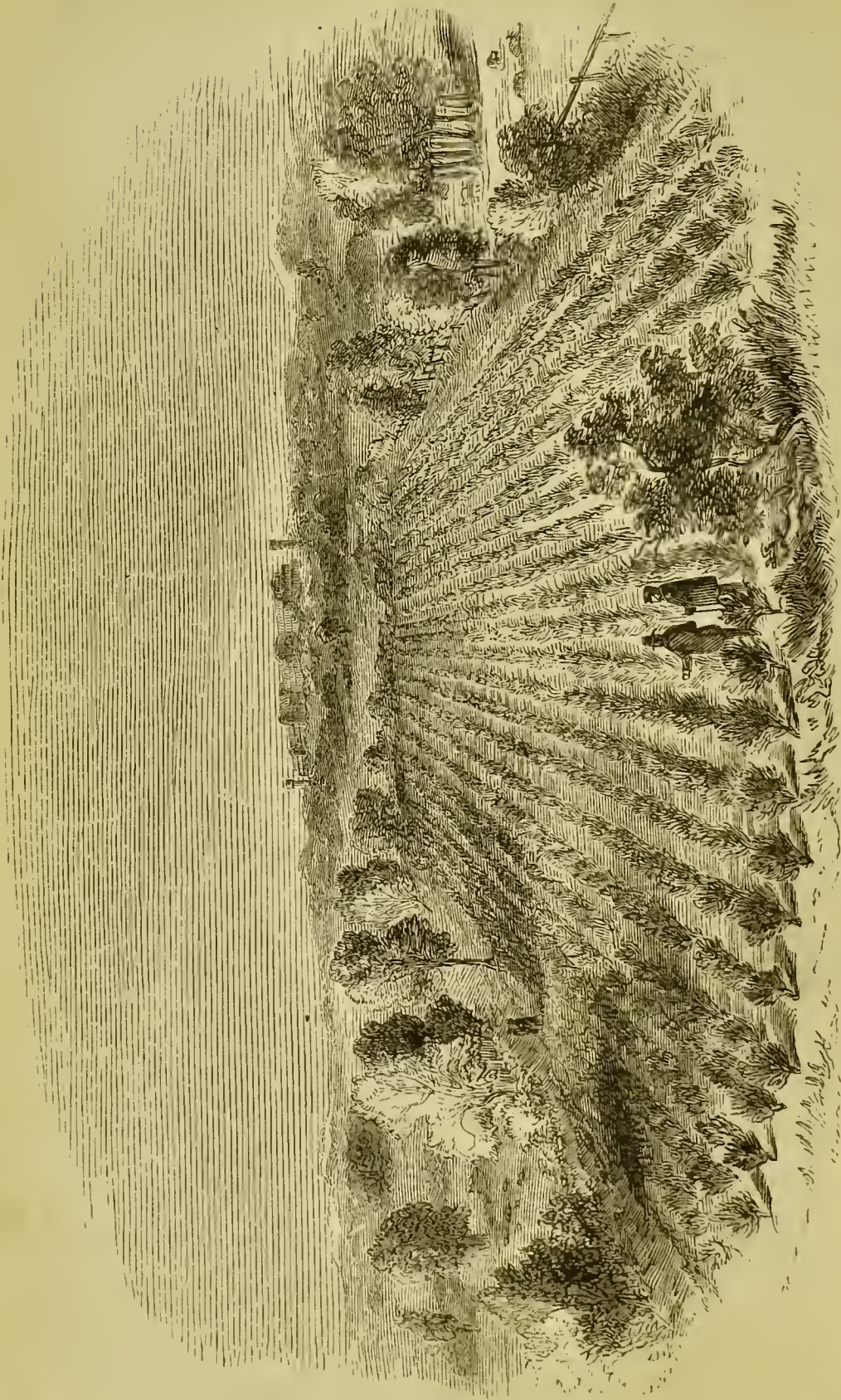
The first process yields the finest quality; it is that which is adopted by the firm of Smyth and Nephew, whose reputation for this article is such that it gives a good character in foreign markets, especially India, to all products of lavender of English manufacture. Lavender essence, that which is made by the still, is quite white, while that by mixture only always has a yellowish tint, which, by age, becomes darker and resinous.

Smyth's Lavender.

To produce a very fine distillate, take —

Otto of English lavender	-	-	-	4 oz.
Rectified spirit (60 over proof)	-	-	-	5 pints.
Rose-water	-	-	-	1 pint.

Mix and distil five pints for sale. Such essence of lavender is expensive, but at 10s. a pint of 14 oz. ! there is a margin for profit. It not being convenient to the general dealer to sell distilled lavender essence,



MITCHAM LAVENDER FIELD, NEAR THE CRYSTAL PALACE, SURREY

the following form, by mixture, will produce a first-rate article, and nearly as white as the above:—

Essence of Lavender.

Otto of lavender	-	-	-	-	6 oz.
Rectified spirit	-	-	-	-	1 gallon.

The perfumer's retail price for such quality is 10s. per imperial pint of 20 oz.

Many perfumers and druggists, in making lavender water or essence, use a small portion of bergamot, with an idea of improving its quality — a very erroneous opinion; moreover, such lavender quickly discolours.

LAVENDER WATER. — Take

English oil of lavender	-	-	-	-	4 oz.
Spirit	-	-	-	-	3 quarts.
Rose-water	-	-	-	-	1 pint.

Filter, and it is ready for sale.

COMMON LAVENDER WATER. Same form as the above, substituting French lavender for the British.

Detection of Spike Oil and Turpentine in Otto of Lavender.

BY DR. J. GASTELL.

There are two kinds of lavender oil known in commerce; one, which is very dear, and is obtained from the flowers of the *Lavandula vera*; the other is much cheaper, and is prepared from the flowers of the *Lavandula Spica*. The latter is generally termed oil of spike. In the south of France whether the

oil be distilled from the flowers of the *Lavandula vera* or *Lavandula Spica*, it is named oil of lavender.

By the distillation of the whole plant, or only the stalk and the leaves, a small quantity of oil is obtained, which is rich in camphor, and is there called oil of spike. Pure oil of lavender should have a specific gravity from $\cdot 876$ to $\cdot 880$, and be completely soluble in five parts of alcohol of a specific gravity of $\cdot 894$. A greater specific gravity shows that it is mixed with oil of spike; and a less solubility, that it contains oil of turpentine.

Recipes for Rondeletia, Lavender Bouquet, and other lavender compounds, will be given when we come to speak of compound perfumes, which will be reserved until we have finished explaining the method of making the simple essences.

LEMON.— This fine perfume is abstracted from the *Citrus Limonum*, by expression, and also by distillation from the rind of the fruit. That which is procured by expression, has a much finer odour and a more intense lemony smell than the distilled product. As a distinction, the expressed lemon is called CITRON ZEST, and the distilled quality is known as Ess. Lemon. The otto of lemons in the market is principally from Messina, where there are hundreds of acres of “lemon groves.” Otto of lemons, like all the ottos of the Citrus family, is rapidly prone to oxidation when in contact with air and exposure to light; a high temperature is also detrimental, and as such is the case, it should be pre-

served in a cool cellar. Most of the samples from the gas-heated shelves of the druggists' shops are as much like essence of turpentine, to the smell, as that of lemons; rancid oil of lemons may, in a great measure, be purified by agitation with warm water and final decantation. The following remarks, made by Mr. Cobb, of Yarmouth, are useful:—

“Being constantly annoyed by the deposit and alteration in my essence of lemons, I have tried various methods of remedying the inconvenience.

“I first tried redistilling it, but besides the loss consequent on distilling small quantities, the flavour is thereby impaired. As the oil became brighter when heated, I anticipated that all its precipitable matter would be thrown down at a low temperature, and I applied a freezing mixture, keeping the oil at zero for some hours. No such change, however, took place.

“The plan which I ultimately decided upon as the best which I had arrived at, was to shake up the oil with a little hot water, and to leave the water in the bottle; a mucilaginous preparation forms on the top of the water, and acquires a certain tenacity, so that the oil may be poured off to nearly the last, without disturbing the deposit. Perhaps cold water would answer equally well, were it carefully agitated with the oil and allowed some time to settle. A consideration of its origin and constitution, indeed, strengthens this opinion; for although lemon otto is obtained both by distillation and expression, that

which is usually found in commerce is prepared by removing the "flavedo" of lemons with a rasp, and afterwards expressing it in a hair sack, allowing the filtrate to stand, that it may deposit some of its impurities, decanting and filtering. Thus obtained, it still contains a certain amount of mucilaginous matter, which undergoes spontaneous decomposition, and thus (acting, in short, as a ferment) accelerates a similar change in the oil itself. If this view of its decomposition be a correct one, we evidently, in removing this matter by means of the water, get rid of a great source of alteration, and attain the same result as we should by distillation, without its waste or deterioration in flavour.

"I am, however, aware that some consider the deposit to be modified resin. Some curious experiments of Saussure have shown that volatile oils absorb oxygen immediately they have been drawn from the plant, and are partially converted into a resin, which remains dissolved in the remainder of the essence.

"He remarked that this property of absorbing oxygen gradually increases until a maximum is attained, and again diminishes after a certain lapse of time. In the oil of lavender this maximum remained only seven days, during each of which it absorbed seven times its volume of oxygen. In the oil of lemons the maximum was not attained until at the end of a month; it then lasted twenty-six days, during each of which it absorbed twice its volume of oxygen.

It is the resin formed by the absorption of oxygen, and remaining dissolved in the essence, which destroys its original odour. In conclusion, I would recommend that this oil, as well as all other essential oils, be kept in a cool, dark place, where no very great changes of temperature occur."

When new and good, lemon otto may be freely used in combination with rosemary, cloves, and caraway, for perfuming powders for the nursery. From its rapid oxidation, it should not be used for perfuming grease, as it assists rather than otherwise all fats to turn rancid; hence pomatums so perfumed will not keep well. In the manufacture of other compound perfumes, it should be dissolved in spirit, in the proportion of six to eight ounces of oil to one gallon of spirit. There is a large consumption of otto of lemons in the manufacture of eau de Cologne; that Farina uses it, is easily discovered by adding a few drops of Liq. Ammoniaë fort. to half an ounce of his eau de Cologne, the smell of the lemon is thereby brought out in a remarkable manner.

Perhaps it is not out of place here to remark, that in attempts to discover the composition of certain perfumes, we are greatly assisted by the use of strong Liq. Ammoniaë. Certain of the essential oils combining with the Ammonia, allow those which do not do so, if present in the compound, to be smelt.

LEMON GRASS. — According to Thwaites, the otto in the market under this name is derived from the

Andropogon Nardus, a species of grass which grows abundantly in India. It is cultivated to a large extent in Ceylon and in the Moluccas purposely for the otto, which from the plant is easily procured by distillation. Lemon grass otto, or, as it is sometimes called, oil of verbena, on account of its similarity of odour to that favourite plant, is imported into this country in old English porter and stout bottles. It is very powerful, well adapted for perfuming soaps and greases, but its principal consumption is in the manufacture of artificial essence of verbena. From its comparatively low price, great strength, and fine perfume (when diluted), the lemon grass otto may be much more used than at present with considerable advantage to the retail shopkeeper.

The annual production of lemon grass otto in Ceylon is nearly 1500 lbs., and it is valued there at 1s. 4d. per ounce. Specimens of the plant which produces it are to be seen at the Royal Gardens, Kew.

LILAC.—The fragrance of the flowers of this ornamental shrub is well known. The essence of lilac is obtained either by the process of maceration, or enfleurage with grease, and afterwards treating the pomatum thus formed with rectified spirit, in the same manner as previously described for cassie; the odour so much resembles tubereuse, as to be frequently used to adulterate the latter, the demand for tubereuse being at all times greater than the supply. A beautiful *Imitation of Essence of White Lilac* may be compounded thus:—

Spirituos extract from tubereuse pomade	-	1	pint.
„ „ of orange flower pomade	-	$\frac{1}{4}$	„
Otto of almonds	-	3	drops.
Extract of civet	-	$\frac{1}{2}$	oz.

The civet is only used to give permanence to the perfume of the handkerchief.

LILY. — The manufacturing perfumer rejects the advice of the inspired writer, to “consider the lilies of the field.” Rich as they are in odour, they are not cultivated for their perfume. If lilies are thrown into oil of sweet almonds, or olive oil, they impart to it their sweet smell; but to obtain anything like fragrance, the infusion must be repeated a dozen times with the same oil, using fresh flowers for each infusion, after standing a day or so. The oil being shaken with an equal quantity of spirit for a week, gives up its odour to the alcohol, and thus extract of lilies *may* be made. But how it *is* made is thus:—

Imitation Lily of the Valley.

Extract of tubereuse	-	-	-	$\frac{1}{2}$	pint.
„ jasmine	-	-	-	1	oz.
„ fleur d'orange	-	-	-	2	oz.
„ vanilla	-	-	-	3	oz.
„ cassie	-	-	-	$\frac{1}{4}$	pint.
„ rose	-	-	-	$\frac{1}{4}$	„
Otto of almonds	-	-	-	3	drops.

Keep this mixture together for a month, and then bottle it for sale. It is a perfume that is very much admired.

MACE.— This substance is procured from the

nutmeg-tree: thus, the nutmegs are enclosed in four different covers, the first is a thick husk, something like that of our walnuts, but larger; under this lies a thin reddish coat, which is the mace of commerce; the mace wraps up the shell and opens like a network, as the fruit, or rather seed grows; the shell is hard and thin and destitute of odour; under this is a greenish film, of no use in trade, but which is, in truth, the shirt of the seed or nutmeg. The odour of mace only resembles that of nutmeg in being spicy; it cannot, however, be mistaken for the smell of nutmeg. The otto of mace, like that of nutmeg, is readily procured by distillation. The nutmeg-tree, like that of orange, gives distinct fragrances in different parts of it. Thus we have otto of mace and otto of nutmeg produced by the same plant within a quarter of an inch of each other. What wonderful valves and taps to keep them from mixing! Ground mace is used in the manufacture of some of those scented powders called Sachets. The strong-smelling essential oil is useful for scenting soap.

MAGNOLIA.—The perfume of this flower is superb; practically, however, it is of little use to the manufacturer; the large size of the blossoms and their comparative scarcity prevents their being used, but a very excellent imitation of their odour is made as under, and is that which is found in the perfumers' shops of London and Paris.

Imitation "Essence of Magnolia."

Spirituos extract of orange-flower pomatum			1 pint.
"	"	rose pomatum -	- 2 pints.
"	"	tubereuse pomatum	- $\frac{1}{2}$ pint.
"	"	violet pomatum	- $\frac{1}{2}$ "
Otto of citron zeste	-	-	- 3 drs.
"	almonds	-	- 10 drops.

MARJORAM.—The otto procured by distilling *Origat majorana*, commonly called oil of origeat by the French, is exceedingly powerful, and in this respect resembles all the ottos from the different species of thyme, of which the marjoram is one. One hundredweight of the dry herb yields about ten ounces of the otto. Origeat oil is extensively used for perfuming soap, but more in France than in England. It is the chief ingredient used by Gelle Frères, of Paris, for scenting their "Tablet Monstre Soap," so common in the London shops.

MEADOW-SWEET, known also as MEADOW QUEEN.—A sweet-smelling otto can be produced by distilling the *Spiræa Ulmaria*, but it is not used by perfumers; it is, however, interesting as being one of those organic substances which can be made in the chemical laboratory.

MELISSA. See BALM.

MIGNONETTE, otherwise RÉZÉDA.—But for the exquisite odour of this little flower, it would scarcely be known otherwise than as a weed. Sweet as it is in its natural state, and prolific in odour, we are not able to maintain its characteristic smell as an essence.

Like many others, during separation from the plant, the fragrance is more or less modified; though not perfect, it still reminds the sense of the odour of the flowers. To give it that sweetness which it appears to want, a certain quantity of violet is added to bring it up to the market odour.

As this plant is so very prolific in odour, we think something might be done with it in England, especially as it flourishes as well in this country as in France. We desire to see Flower Farms and organised Perfumatories established in the British Isles, for the extraction of essences and the manufacture of pomade and oils, of such flowers as are indigenous, or that thrive in the open fields of our country. Besides opening up a new field of enterprise and good investment for capital, it would give healthy employment to many women and children. Open air employment for the young is of no little consideration to maintain the stamina of the future generation; for it cannot be denied that our factory system and confined cities are prejudicial to the physical condition of the human family.

To return from our digression. The essence of mignonette, or, as it is more often sold under the name of *Extrait de Rézéda*, is prepared by infusing the *rézéda* pomade in rectified spirit, in the proportion of one pound of pomade to one pint of spirit, allowing them to digest together for a fortnight, when the essence is filtered off the pomade. One ounce of extract of Tolu is added to every pint

This is done to give permanence to the odour upon the handkerchief, and does not in any way alter its smell. M. March, of Nice, is the principal maker of Rézéda pomade; to use his own words, he has a *spécialité* for its fabrication. It is made by the enfleurage process.

MIRIBANE. — The French name for artificial essence of almond. (See ALMOND.)

MINT. — All the *Menthidæ* yield fragrant ottos by distillation. The otto of the spear-mint (*M. viridis*) is exceedingly powerful, and very valuable for perfuming soap, in conjunction with other perfumes. Perfumers use the ottos of the mint in the manufacture of mouth washes and dental liquids. The leading ingredient in the celebrated “eau botot” is oil of peppermint in alcohol. Mint ottos have more power than any other aromatic to overcome the smell of tobacco. Mouth washes, it must be remembered, are as much used for rinsing the mouth after smoking as for a dentifrice.

MUSK-SEED. — This odorous substance, known in the perfumery trade as *Grains d'Ambrette*, is produced by the plant *Hibiscus Abemoschus*. *Kabb-el-Misk* is the Arabic name, of which, says Burnett, *Abemoschus* is a vile corruption. Several other allied species are remarkable for a similar odour, of which one, SUMBUL, has been recently brought into notice by Mr. John Savory. Very little is known in England of Chinese toilet practices; but we are told, on good authority, that from one of

these species, the *Hibiscus Rosa sinensis*, “the Chinese make a black dye for their hair and eyebrows, and a blacking for their shoes!” Musk-seed, when ground, certainly reminds our smelling sense of the odour of musk, but it is poor stuff at best; however, for making cheap sachet-powder, it may be used for variety’s sake. When hair-powder was in fashion, perfumers used to scent the starch of which the powder was made, by mixing the ground ambrette with the fecula; after lying together for a few hours the starch was then sifted away, and packed for sale.

MYRTLE. —

“The laurel and the myrtle sweets agree,
And both in nosegays shall be bound for thee.”

HORACE.

A very fragrant otto may be procured by distilling the leaves of the common myrtle; one hundredweight will yield about five ounces of the volatile oil. The demand for essence of myrtle being very limited, the odour as found in the perfumers’ shops is very rarely a genuine article, but is imitated thus: —

Imitation “Essence of Myrtle.”

Extract of vanilla	-	-	-	-	$\frac{1}{2}$ pint.
„ roses	-	-	-	-	1 „
„ fleur d’orange	-	-	-	-	$\frac{1}{2}$ „
„ tubereuse	-	-	-	-	$\frac{1}{2}$ „
„ jasmine	-	-	-	-	2 oz.

Mix, and allow to stand for a fortnight: it is then

fit for bottling, and is a perfume that gives a great deal of satisfaction.

Myrtle-flower water is sold in France under the name of eau d'ange, and may be prepared like rose, elder, or other flower waters.

MYRRH.—This odorous gum or resin has been known from time immemorial, as is evident from its frequent mention in the Bible. Its fragrance is due to a peculiar otto or essential oils. One hundred pounds yield by distillation about eight ounces of the otto, which has all the characteristics of myrrh in a high degree. Considering such a substance to possess interest, I have placed a sample of the otto of Myrrh in the Museum at Kew.

Major Harris describes the myrrh tree (*Balsamodendron Myrrha*) as growing abundantly on the Abyssinian coast of the Red Sea to the Straits of Bab-el-Mandeb, over all the barren hill-sides of the low zone inhabited by the Danakil or Adaril tribes. It is called Kurbeta, and there exist two varieties; one (producing the better description of the gum) being a dwarf shrub with deeply serrated crisp leaves of a dull green, while the other, which yields a substance more like balm than myrrh, attains a height of ten feet, and has bright shining slightly dentated leaves. The myrrh called Hofali flows freely from any wound, in the form of a milky juice, possessing a perceptible acridity, which either evaporates or becomes chemically changed during the formation of the gum. The seasons for collecting it are in

January, when the buds appear after the first rain, and in March, when the seeds are ripe.

Every passer-by transfers such portions of it as he may find to the hollow boss of his shield, and exchanges it for a handful of tobacco with the next slave-dealer whom he meets on the caravan-route. The merchants also of the sea-coast, before returning from Abyssinia, send into the forests that gird the western bank of the river Hawash, and bring away considerable quantities of the *Hofali*, which is sold at a high price.

The natives administer it to their horses, in cases of fatigue and exhaustion. (*Trans. Linn. Soc.*)

Gum myrrh is used extensively by perfumers, in the manufacture of dentifrices, in pastils, and fumi-gating spirits.

NEROLI, or ORANGE-FLOWER. — Two distinct odours are procurable from the orange-blossom, varying according to the methods adopted for procuring them. This difference of perfume from the same flower is a great advantage to the manufacturer, and it is a curious fact worthy of inquiry by the chemical philosopher. This duality of fragrance is not peculiar to the orange-flower, but applies to many others, especially rose — probably to all flowers.

When orange-flowers are treated by the maceration process—that is, by infusion in a fatty body,—we procure orange-flower pomatum, its strength and quality being regulated by the number of infusions of the flower made in the same grease.

By digesting this orange-flower pomatum in rectified spirits, in the proportions of from six pounds



Orange.

to eight pounds of pomade to a gallon of spirit for about a month at a summer heat, we obtain the *Extrait de Fleur d'Orange*, or extract of orange-flowers, a handkerchief perfume surpassed by none. In this state its odour resembles the original so much, that with closed eyes the best judge could not distinguish the scent of the extract from that of the flower. The peculiar flowery odour of this extract renders it valuable to the perfumers, not only to sell in a pure state, but, slightly modified with other *extraits*, passes for "sweet pea," "magnolia," &c., which it slightly resembles in fragrance.

Now, when orange-flowers are distilled with water,

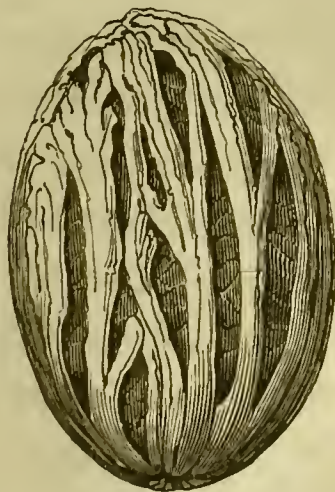
we procure the otto of the blossom, which is known commercially as oil of neroli. The neroli procured from the flowers of the *Citrus Aurantium* is considered to be the finest quality, and is called "neroli petale." The next quality, "neroli bigarade," is derived from the blossoms of the *Citrus Bigaradia*, or Seville orange. Another quality, which is considered inferior to the preceding, is the neroli petit grain, obtained by distilling the leaves and the young unripe fruit of the different species of the citrus.

The "petale" and "bigarade" neroli are used to an enormous extent in the manufacture of Hungary water and eau de Cologne and other handkerchief perfumes. The petit grain is mainly consumed for scenting soap. To form the esprit de neroli, dissolve 2 ounces of neroli petale in one gallon of rectified spirits. Although very agreeable, and extensively used in the manufacture of bouquets, it has no relation to the flowery odour of the extrait de fleur d'orange, as derived from the same flowers by maceration; in fact, it has as different an odour as though obtained from another plant, yet in theory both these *extraits* are but alcoholic solutions of the otto of the flower.

The water used for distillation in procuring the neroli, when well freed from the oil, is imported into this country under the name of eau de fleur d'orange, and may be used, like elder-flower and rose-water, for the skin, and as an eye lotion. It is remarkable for its fine fragrance, and it is astonishing that it

is not more used, being moderate in price. There are three sorts of orange-flower waters found in commerce. The first is distilled from the flowers; the second is made with distilled water and neroli; and the third is distilled from the leaves, the stems, and the young unripe fruit of the orange-tree. The first may be easily distinguished by the addition of a few drops of sulphuric acid to some of the water in a tube; a fine rose colour is almost immediately produced. The second also gives the same colour when it is freshly prepared; but after a certain time—two or three months at the farthest—this colour is no longer produced, and the aroma disappears completely. The third is not discoloured by the addition of the sulphuric acid; it has scarcely any odour, and that rather an odour of the lemon plant than of orange-flowers. (See *Syringa*.)

NUTMEG. — Few fragrant substances are of more



Nutmeg with Mace upon it.

commercial importance than the nutmeg. Its history,

says Burnett, "affords an instance of the extravagance to which the spirit of monopoly will urge and has carried not only private individuals but even states."

The principal nutmeg-gardens of the world are the Banda Islands, colonised by the Dutch about two hundred and fifty years ago. Soon after the subjugation of the original inhabitants, they endeavoured to secure to themselves the entire trade in this odorous substance. For this purpose they encouraged the cultivation of the nutmeg-tree in only a few of the islands, and being over anxious, for the sake of the monopoly, to have them there exclusively under their own command, they destroyed the trees in the neighbouring isles.

It will be remembered that they pursued the same policy with respect to the clove plant. More than once they have, however, suffered dearly for their insatiable avarice; for the dreadful hurricanes and earthquakes, which swept harmlessly over the other islands, nearly annihilated the nutmeg-trees of Banda in 1778. While the Dutch held the Spice Islands, the quantity of nutmegs and mace exported from their nutmeg-grounds, circumscribed as they were, was truly enormous; the quantity sold in Europe has been estimated at 250,000 pounds, and in the East Indies at 125,000 pounds; of mace, the average has been 90,000 pounds sold in Europe, and 10,000 in India.

When the Spice Islands were taken by the British

in 1796, the importation by the East India Company into England alone, in two years following the capture, were, of nutmegs, 129,723 pounds, and of mace 286,000 pounds. It is thus evident that Britannia does not “turn up her nose” at the odour of nutmeg and mace!

When the crops of spice have been superabundant and the price, in consequence, likely to be reduced, the same ignorant spirit before mentioned has actuated the Dutch to destroy immense quantities of the fruit rather than suffer the market price to be lowered. When Sir William Temple was at Amsterdam, a merchant who had returned from Banda assured him that “at one time he saw three piles of nutmegs burnt, each of which was more than a church of ordinary dimensions could hold.” Mr. Wilcocks, the translator of *Stavarinus's Travels*, relates that he beheld such a conflagration of cloves, nutmegs, and cinnamon, upon the Island of Newland, near Middleburgh, in Zealand, as perfumed the air with their peculiar fragrance for many miles round. Balfour says, that “in 1814, when the Moluccas were in the possession of the English, the number of nutmeg-trees planted out was estimated at 570,500, of which 480,000 were in bearing. The produce of nutmegs in the Moluccas has been reckoned at from 600,000 to 700,000 pounds per annum, of which half goes to Europe, and about one-fourth that quantity of mace. The annual consumption of nutmegs in Britain is said to be 140,000 pounds. The nutmeg-tree, like many

others, yields two distinct odorous substances, that is, otto of mace (see MACE, page 88.), and otto of nutmeg. The otto of nutmeg, of which we have here to speak, is a beautiful white and transparent fluid, having an intense fragrance of the nut, from which it is easily procured by distillation. It enters into the composition of numerous perfumery preparations, of which the Frangipanni series are examples. As it is more powerful than cloves, it must be used sparingly; but, when used with judgment, combines happily with lavender, santal, bergamot, and others.

By expression, the nutmeg will also yield an unctuous fat oil of an agreeable odour; this combined with an alkali produces a pleasant soap. Forty years ago, such soap was commonly sold by perfumers under the name of Bandana or Banda soap, but which is now quite out of date.

The pleasant odour of the nutmeg is familiar to all. The ground nuts are used advantageously in the combinations of scented powders used for scent-bags. (See SACHET-POWDER.)

OLIBANUM is a gum resin, used to a limited extent in this country, in the manufacture of incense and pastils. It is chiefly interesting as being one of those odoriferous bodies of which frequent mention is made in the Holy Volume.

“It is believed,” says Burnett, “to have been one of the ingredients in the sweet incense of the Jews;

and it is still burnt as incense in the Greek and Romish churches, where the diffusion of such odours round the altar forms a part of the prescribed religious service." — Mr. Simmons says: "The gum olibanum of commerce is the frankincense of the ancients and the luban of the Arabs. In India it is obtained from several species of *Boswellia*, *serrata*, *thurifera*, and *glabra*. No botanical description appears to have been published of the African tree, although Captain Kempthorne, Major Harris, and other travellers, furnish some general account of it. The tree invariably grows from the bare and smooth sides of the white marble rocks, or from isolated blocks of the same, scattered over the plain without any soil whatever. On making a deep incision into the trunk, the resin exudes profusely, of the colour and consistence of milk, but hardening into a mass by exposure to the air. The young trees produce the best and most valuable gum, the older merely yielding a clear glutinous fluid resembling copal, and exhaling a strong resinous odour.

"Olibanum was formerly in high repute as a sovereign remedy against inflammation of the eyes, and as an efficacious remedy in consumption. It was also commonly drank as a stimulant in wine. But for all these purposes it has long gone out of use, and is chiefly imported here for reshipment to the Continent, being bought up by the Greek merchants for the use of the Church.

“The trees that produce the luban or frankincense are of two kinds, viz., the luban meyeti and the luban bedowi. Of these the meyeti, which grows out of the naked rock, is the more valuable; and when clean picked and of good quality, it is sold by the merchants on the coast for $1\frac{1}{4}$ dollar per frasila of 20 lbs. The luban bedowi of the best quality is sold for 1 dollar per frasila. Of both kinds the palest colour is preferred. The trees vary greatly in height, but are never above 20 feet, with a stem of 9 inches in diameter. Their form is very graceful, and when springing from a mass of marble on the brink of a precipice, their appearance is especially picturesque.

“Although the Wursungili range and other mountainous tracts afford an inexhaustible supply of frankincense, it is a mistake to suppose that elevated districts produce the best gum.

“Lieutenant Cruttenden, in his journey among the Edoor tribes, states that the gum of the large-leaf kind of frankincense tree is not much prized.”

Olibanum is partially soluble in alcohol, and, like most of the balsams, probably owes its perfume to a peculiar odoriferous body, associated with the benzoic acid it contains.

For making the tincture or extract of olibanum, take 1 pound of the gum to 1 gallon of the spirit.

ORANGE. — Under the title “Neroli” we have already spoken of the odoriferous principle of the orange blossom. We have now to speak of what is

known in the market as essence of orange, or, as it is more frequently termed, essence of Portugal,— a name, however, which we cannot admit in a classified list of the “odours of plants.”

The otto of orange peel, or odoriferous principle of the orange fruit, is procured by expression and by distillation. The peel is rasped in order to crush the little vessels or sacs that imprison the otto.

Its abundance in the peel is shown by pinching a piece near the flame of a candle; the otto that spurts out ignites with a brilliant illumination.

It has many uses in perfumery, and from its refreshing fragrance finds numerous admirers.

It is the leading ingredient in what is sold as “Lisbon water” and “eau de Portugal.” The following is a very useful form for preparing

Lisbon Water.

Rectified spirit (not less than 60 over proof)				1 gallon.
Otto of orange peel	-	-	-	4 oz.
„ citron zeste	-	-	-	2 oz.
„ rose	-	-	-	$\frac{1}{4}$ oz.

This is a form for

Eau de Portugal.

Rectified spirit (60 over proof)				1 gallon.
Essential oil of orange peel	-	-	-	8 oz.
„ citron zeste	-	-	-	2 oz.
„ bergamot	-	-	-	1 oz.
„ otto of rose	-	-	-	$\frac{1}{4}$ oz.

Grape-spirit for this article produces the finest quality.

It should be noted that these perfumes are never to be put into wet bottles, for if in any way damp from water, a minute portion of the ottos are separated, which gives an opalescent appearance to the mixture. Indeed, all bottles should be *spirit rinsed* prior to being filled with any perfume, but especially with those containing essences of orange or lemon peel.

ORRIS, properly IRIS.—The dried rhizome of *Iris florentina* has a very pleasant odour, which, for the want of a better comparison, is said to resemble the smell of violets; it is, however, exceedingly derogatory to the charming aroma of that modest flower when such invidious comparisons are made. Nevertheless the perfume of iris root is good, and well worthy of the place it has obtained as a perfuming substance. The powder of orris root is very extensively used in the manufacture of sachet powders, tooth-powder, &c. It fathers that celebrated “oriental herb” known as “odonto.” For tincture of orris, or, as the perfumers call it,

Extract of Orris,

Take orris root, crushed	-	-	-	7 lbs.
Rectified spirits	-	-	-	1 gallon.

After standing together for about a month, the extract is fit to take off. It requires considerable time to drain away, and, to prevent loss, the remainder of the orris should be placed in the tincture press.

This extract enters into the composition of many of the most celebrated bouquets, such as “Jockey Club,” and others, but is never sold alone, because its odour, although grateful, is not sufficiently good to stand public opinion upon its own merits; but in combination its value is very great; possessing comparatively little aroma itself, it has the power of strengthening the odour of other fragrant bodies; like the flint and steel, which, though comparatively incombustible, readily fire inflammable bodies.

PALM (*Elæis guineensis*).—The odour of palm oil—the fat oil of commerce—is due to a fragrant principle which it contains. By infusion in alcohol, the odoriferous body is dissolved, and resembles, to a certain extent, the tincture of orris, or of extract of violet, but is very indifferent, and is not likely to be brought into use, though several attempts have been made to render it of service when the cultivation of the violets have failed from bad seasons.

PATCHOULY (*Pogostemon Patchouli*, Lindley; *Plectranthus crassifolius*, Burnett) is an herb that grows extensively in India and China. It somewhat resembles our garden sage in its growth and form, but the leaves are not so fleshy.

The odour of patchouly is due to an otto contained in the leaves and stems, and is readily procured by distillation. 1 cwt. of good herb will yield about 28 oz. of the essential oil, which is of a dark brown colour, and of a density about the same as that of oil of otto of santal wood, which it resembles in its

physical character. Its odour is the most powerful of any derived from the botanic kingdom; hence, if



Patchouly.

mixed in the proportion of measure for measure, it completely covers the smell of all other bodies.

Extract of Patchouly.

Rectified spirit	-	-	-	-	1 gallon.
Otto of patchouly	-	-	-	-	$1\frac{1}{4}$ oz.
„ rose	-	-	-	-	$\frac{1}{4}$ oz.

The essence of patchouly thus made is that which is found in the perfumers' shops of Paris and London. Although few perfumes have such a fashionable run, yet when smelled at in its pure state, it is far from agreeable, having a kind of mossy or musty

odour, analogous to *Lycopodium*, or, as some say, it smells of "old coats."

The characteristic smell of Chinese or Indian ink is due to some admixture of this herb and camphor.

The origin of the use of patchouly as a perfume in Europe is curious. A few years ago real Indian shawls bore an extravagant price, and purchasers could always distinguish them by their odour; in fact, they were perfumed with patchouly. The French manufacturers had for some time successfully imitated the Indian fabric, but could not impart the odour.

At length they discovered the secret, and began to import the plant to perfume articles of their make, and thus palm off home-spun shawls as real Indian! From this origin the perfumers have brought it into use. Patchouly herb is extensively used for scenting drawers in which linen is kept; for this purpose it is best to powder the leaves and put them into muslin sacks, covered with silk, after the manner of the old-fashioned lavender bag. In this state it is very efficacious in preventing the clothes from being attacked by moths. Several combinations of patchouly will be given in the recipes for "bouquets and nosegays."

PEA (SWEET). — A very fine odour may be extracted from the flowers of the chick-vetch by enfleurage with any fatty body, and then digesting the pomade produced in spirit. It is, however, rarely manufactured, because a very close

Imitation of the Essence of Sweet Pea

can be prepared thus : —

Extract of tubereuse	-	-	-	$\frac{1}{2}$ pint.
„ fleur d'orange	-	-	-	$\frac{1}{2}$ „
„ rose from pomatum	-	-	-	$\frac{1}{2}$ „
„ vanilla	-	-	-	1 oz.

Scents, like sounds, appear to influence the olfactory nerve in certain definite degrees. There is, as it were, an octave of odours like an octave in music; certain odours coincide, like the keys of an instrument. Such as almond, heliotrope, vanilla, and orange blossom blend together, each producing different degrees of a nearly similar impression. Again, we have citron, lemon, orange peel, and verbena, forming a higher octave of smells, which blend in a similar manner. The metaphor is completed by what we are pleased to call semi-odours, such as rose and rose-geranium for the half note; petty grain, neroli, a black key, followed by fleur d'orange. Then we have patchouly, santal wood, and vitivert, and many others running into each other. “ We know that music depends upon a fixed mathematical law, not invented by man, but existing in nature. Nature is not a prodigal in her operations—she is no waster of power: the better she is understood, the more simple she appears; and there is nothing, therefore, contrary to sound reason in the idea, that the whole of the pleasures of the sense of smell will be found to depend upon cognate laws.” — *Chambers's Journal*.

From the odours already known we may produce,

by uniting them in proper proportion, the smell of almost any flower, except jasmine.

The odours of some flowers resemble others so nearly, that we are almost induced to believe them to be the same thing, or, at least, if not evolved from the plant as such, to become so by the action of the air-oxidation. It is known that some actually are identical in composition, although produced from totally different plants, such as camphor, turpentine, rosemary. Hence we may presume that chemistry will sooner or later produce one from the other, for with many it is merely an atom of water or an atom of oxygen that causes the difference. It would be a grand thing to produce otto of roses from oil of rosemary, or from the rose geranium oil; and theory indicates its possibility.

The essential oil of almonds in a bottle that contains a good deal of air-oxygen, and but a very little of the oil, spontaneously passes into another odorous body, benzoic acid; which is seen in crystals to form over the dry parts of the flask. This is a natural illustration of this idea. In giving the recipe for "sweet pea" as above, we form it with the impression that its odour resembles the orange blossom, which similarity is approached nearer by the addition of the rose and tuberose.

The vanilla is used merely to give permanence to the scent on the handkerchief, and this latter body is chosen in preference to extract of musk or ambergris, which would answer the same purpose of giving per-

manence to the more volatile ingredients; because the vanilla strikes the same key of the olfactory nerve as the orange blossom, and thus no new idea of a different scent is brought about as the perfume dies off from the handkerchief. When perfumes are not mixed upon this principle, then we hear that such and such a perfume becomes "sickly" or "faint" after they have been on the handkerchief a short time.

PEPPERMINT. — The finest peppermint is that cultivated at Mitcham, Surrey; the sight of the numerous acres of this plant at that place is alone sufficient to show the public taste for this odour: strictly speaking, however, peppermint is consumed more through the mouth than the nose. Large as is our own consumption, England exports a considerable amount of the herb and of the otto of peppermint, which is readily obtained from it by distillation.

Peppermint is too familiar in the lozenge shape ever to become a favourite as a perfume; nevertheless perfumers use a fair portion of it in scenting soap and in the making of mouth washes: for these, however, it is employed by French perfumers more than by English. The fact is, fine peppermint is a scarcer article with them than us; so by a law of human nature — ever seeking for that which is the most difficult to obtain — the continental people esteem it more than we do. Dr. Geiseler, who has conducted some investigations on the respective merits of distilled oil of peppermint by steam heat and by the

heat of the naked fire, has arrived at the following conclusions:—

“Dried peppermint herb affords by distillation over the naked fire a greater quantity of oil than by distillation by the aid of steam.

“The oil obtained by steam distillation is specifically lighter, and of a brighter colour, than that distilled over a naked fire.

“By the rectification of the latter by means of steam heat, an oil is obtained which is equal to that obtained by steam distillation, and has a specific gravity of $\cdot 910$, while the oil remaining behind by steam-rectification in the retort shows a specific gravity of $\cdot 930$.

“Fresh peppermint herb gives by steam distillation and by distillation over a naked fire an equal quantity of oil.

“Dried peppermint herb contains two different oils, possessing different boiling points and different specific gravities. The oil of higher specific gravity must be formed from that of the lower specific gravity during the drying and keeping of the herb, as the freshly-dried herb affords only one oil, of specific gravity $\cdot 910$.”

One of the most esteemed articles of perfumery manufacture in which peppermint takes the initiative is the renowned *Eau Botot*.

PINE-APPLE. — Both Dr. Hofmann and Dr. Lyon Playfair have fallen into some error in their inferences with regard to the application of this odour in per-

fumery. After various practical experiments conducted in a large perfumatory, we have come to the conclusion that it cannot be so applied, simply because when the essence of pine-apple is smelled at, the vapour produces an involuntary action of the larynx, producing cough, when exceedingly dilute. Even in the infinitesimal portions it still produces disagreeable irritation of the air-pipes, which, if prolonged, such as is expected if used upon a handkerchief, is followed by intense headache. It is obvious, therefore, that the legitimate use of the essence of pine-apple (butyric ether) cannot be adopted with benefit to the manufacturing perfumer, although invaluable to the confectioner as a flavouring material. What we have here said refers to the artificial essence of pine-apple, or butyrate of ethyloxyde, which, if very much diluted with alcohol, resembles the smell of pine-apple, and hence its name; but how far the same observations are applicable to the true essential oil from the fruit or epidermis of the pine-apple, remains to be seen *when* we procure it. As the West Indian pine-apples are now coming freely into the market, the day is probably not distant when demonstrative experiments can be tried; but hitherto, it must be remembered, our experiments have only been performed with a body *resembling in smell* the true essential oil of the fruit. The physical action of all ethers upon the human body is quite sufficient to prevent their application in perfumery, however useful in confectionery, which it is understood has to deal with another of

the senses,— not of smell, but of taste. The commercial “essence of pine-apple,” or “pine-apple oil,” and “jargonelle pear-oil,” are admitted only to be *labelled* such, but really are certain organic acid ethers. For the present, then, the perfumer must only look on these bodies as so many lines in the “Poetry of Science,” which, for the present, are without practical application in his art. For the manufacture of artificial fruit-essence, see Appendix.

PINK (*Dianthus Caryophyllus*). — The clove pink emits a most fragrant odour, “especially at night,” says Darwin.

“The lavish pink that scents the garden round”

is not, however, at present applied in perfumery, except in name.

Imitation Essence of Clove Pink.

Esprit rose	-	-	-	-	$\frac{1}{2}$ pint.
„ fleur d'orange	-	-	-	-	$\frac{1}{4}$ „
„ „ de cassie	-	-	-	-	$\frac{1}{4}$ „
„ vanilla	-	-	-	-	2 oz.
Oil of cloves	-	-	-	-	10 drops.

It is remarkable how very much this mixture resembles the odour of the flower, and the public never doubt its being the “real thing.”

RHODIUM. — When rose-wood, the lignum of the *Convolvulus scoparius*, is distilled, a sweet-smelling oil is procured, resembling in some slight degree the

fragrance of the rose, and hence its name. At one time, that is, prior to the cultivation of the rose-leaf geranium, the distillates from rose-wood and from the root of the *Genista canariensis* (Canary rose-wood), were principally drawn for the adulteration of real otto of roses; but as the geranium oil answers so much better, the oil of rhodium has fallen into disuse, hence its comparative scarcity in the market at the present day, though our grandfathers knew it well. One cwt. of wood yields about three ounces of oil.

Ground rose-wood is valuable as a basis in the manufacture of sachet powders for perfuming the wardrobe.

The French have give the name jacaranda to rose-wood, under the idea that the plant called jacaranda by the Brazilians yields it, which is not the case; "the same word has perhaps been the origin of palisander—palixander, badly written."—*Burnet*.

ROSE. —

"Go, crop the gay rose's vermeil bloom,
And waft its spoils, a sweet perfume,
In incense to the skies."

OGILVIE.

This queen of the garden loses not its diadem in the perfuming world. The oil of roses, or, as it is commonly called, the otto, or attar, of roses, is procured (contrary to so many opposite statements) simply by distilling the roses with water.

The otto, or attar, of rose of commerce is derived from the *Rosa centifolia provincialis*. Very exten-

sive rose farms exist at Adrianople (Turkey in Europe); at Broussa, now famous as the residence of Abd-el-Kader; and at Uslak (Turkey in Asia); also at Ghazepore, in India.

The cultivators in Turkey are principally the Christian inhabitants of the low countries of the Balkan, between Selimno and Carloya, as far as Philippopolis, in Bulgaria, about 200 miles from Constantinople. Had not the late Russian aggression been "nipped in the bud," by the advance of the emblem of the rose, shamrock, thistle, and *fleur-de-lis*, it is nearly certain, that the scene of the recent war would have been laid not in the Crimea, but in the Rose Farms of the Balkan: nevertheless, who is there would have doubted the prowess of the descendants of the Houses of York and Lancaster? In good seasons, this district yields 75,000 ounces; but in bad seasons only 20,000 to 30,000 ounces of attar are obtained. It is estimated that it requires at least 2000 rose blooms to yield one drachm of otto.

The otto from different districts slightly varies in odour; many places furnish an otto which solidifies more readily than others, and, therefore, this is not a sure guide of purity, though many consider it such. That which was exhibited in the Crystal Palace of 1851, as "from Ghazepore," in India, obtained the prize.

The otto of Rose which is procured by distillation from the Provence rose of the south of

France and of Nice has a very characteristic fragrance, imparted to it I believe by the bees, which carry the pollen of the orange blossoms so numerous in this district into the rose-buds. The French otto is richer in stereopten than the Turkish; an ounce and a half will crystallise in a gallon of spirit at the same temperature that it requires three ounces of the best Turkish otto to do the same.

“Attar of roses, made in Cashmere, is considered superior to any other; a circumstance not surprising, as, according to Hugel, the flower is here produced of surpassing fragrance as well as beauty. A large quantity of rose-water twice distilled is allowed to run off into an open vessel, placed over night in a cool running stream, and in the morning the oil is found floating on the surface in minute specks, which are taken off very carefully by means of a blade of sword-lily. When cool it is of a dark green colour, and as hard as resin, not becoming liquid at a temperature about that of boiling water. Between 500 and 600 pounds' weight of leaves is required to produce one ounce of the attar.” — *Indian Encyclopædia*.

Pure otto of roses, from its cloying sweetness, has not many admirers: when diluted, however, there is nothing equal to it in odour, especially if mixed in soap, to form rose soap, or in pure spirit, to form the esprit de rose. The soap not allowing the perfume to evaporate very fast, we cannot be surfeited with the smell of the otto.

The finest preparation of rose as an odour is made at Grasse and Cannes, in France. Here the flowers are not treated for the otto, but are subjected to the process of maceration in fat, or in oil, as described under JASMINE, HELIOTROPE, &c. After the maceration

process has been worked for a few days, the pomade is then subject to the enfleurage operation.

The rose pomade thus made, if digested in alcohol, say 8 lbs. of No. 24. Pomade to 1 gallon of spirit, yields an esprit de rose of the first order, very different in smell to that which is made by the addition of otto to spirit. It is difficult to account for this difference, but it is sufficiently characteristic to form a distinct odour. See the articles on FLEUR D'ORANGE and NEROLY (pp. 94, 95.), which have similar qualities, previously described. The esprit de rose made from the French rose pomade is never sold retail by the perfumer; he reserves this to form part of his *recherché* bouquets.

Some wholesale druggists have, however, been selling it now for some time to country practitioners, for them to form extemporaneous rose-water, which it does to great perfection. Roses are cultivated to a large extent in England, near Mitcham, in Surrey; for perfumers' use, to make rose-water. In the season when successive crops can be got, which is about the end of June, or the early part of July, they are gathered as soon as the dew is off, and sent to town in sacks. When they arrive, they are immediately spread out upon a cool floor; otherwise, if left in a heap, they heat to such an extent, in two or three hours, as to be quite spoiled. There is no organic matter which so rapidly absorbs oxygen, and becomes heated spontaneously, as a mass of freshly-gathered roses.

To preserve these roses, the London perfumers immediately pickle them; for this purpose, the leaves are separated from the stalks, and to every bushel of flowers, equal to about 6 lbs.' weight, 1 lb. of common salt is thoroughly rubbed in. The salt absorbs the water existing in the petals, and rapidly becomes brine, reducing the whole to a pasty mass, which is finally stowed away in casks. In this way they will keep almost any length of time, without the fragrance being seriously injured. A good rose-water can be prepared by distilling 12 lbs. of pickled roses, and $2\frac{1}{2}$ gallons of water. "Draw" off 2 gallons; the product will be the double-distilled rose-water of the shops. The rose-water that is imported from the south of France is, however, very superior in odour to any that can be produced here. As it is a residuary product of the distillation of roses for procuring the attar, it has a richness of aroma which appears to be inimitable with English-grown roses. There are five modifications of essence of rose for the handkerchief, which are the *ne plus ultra* of the perfumer's art. They are — esprit de rose triple, essence of white of roses, essence of tea-rose, and essence of moss-rose. The following are the recipes for their formation: —

Esprit de Rose Triple.

Rectified alcohol	-	-	-	-	1 gallon.
Otto of rose	-	-	-	-	3 oz.

Those who admire the rose's fragrance will find

the following formula yield a most *recherché* quality :—

PIESSE'S TWIN-ROSE.

Rose pomade (No. 24.)	-	-	-	8 lbs.
Spirit (60 over proof)	-	-	-	1 gallon.
French otto of rose	-	-	-	1½ oz.

Let the spirit stand on the pomade for a month, then strain it off and add the otto. Mix at a summer heat; in the course of a quarter of an hour the whole of the otto is dissolved, and is then ready for bottling and sale. In the winter season beautiful crystals of the otto—if it is good—appear disseminated through the esprit. (It requires twice the quantity of Turkish otto to crystallize at the same temperature.)

Essence of Moss Rose.

Spirituous extract from French rose pomatum				1 quart.
Esprit de rose triple	-	-	-	1 pint.
Extract fleur d'orange pomatum	-	-	-	1 „
„ of ambergris	-	-	-	½ „
„ musk	-	-	-	4 oz.

Allow the ingredients to remain together for a fortnight; then filter, if requisite, and it is ready for sale.

Essence of White Rose.

Esprit de rose from pomatum	-	-	-	1 quart.
„ „ triple	-	-	-	1 „
„ violette	-	-	-	1 „
Extract of jasmine	-	-	-	1 pint.
„ patchouly	-	-	-	½ „

Essence of Tea Rose.

Esprit de rose pomade	-	-	-	1 pint.
„ „ triple	-	-	-	1 „
Extract of rose-leaf geranium	-	-	-	1 „
„ santal wood	-	-	-	$\frac{1}{2}$ „
„ neroli	-	-	-	$\frac{1}{4}$ „
„ orris	-	-	-	$\frac{1}{4}$ „

ROSEMARY. —

“There’s rosemary, that’s for remembrance.”

SHAKSPEARE.

By distilling the *Rosmarinus officinalis* a thin limpid otto is procured, having the characteristic odour of the plant, which is more aromatic than sweet. One hundredweight of the fresh herb yields about 24 ounces of oil. Otto of rosemary is very extensively used in perfumery, especially in combination with other ottos for scenting soap. Eau de Cologne cannot be made without it, and in the once famous “Hungary water” it is the leading ingredient. The following is the composition of

Hungary Water.

Grape spirit (60 over proof)	-	-	-	1 gallon.
Otto of Hungarian rosemary*	-	-	-	2 oz.
„ lemon peel	-	-	-	1 oz.
„ balm (<i>melissa</i>)	-	-	-	1 oz.
„ mint	-	-	-	$\frac{1}{2}$ drachm.
Esprit de rose	-	-	-	1 pint.
Extract of fleur d’orange	-	-	-	1 „

* The continental rosemary yields quite a different smelling otto to that grown in England.

It is put up for sale in a similar way to eau de Cologne, and is said to take its name from one of the queens of Hungary, who is reported to have derived great benefit from a bath containing it, at the age of seventy-five years. There is no doubt that clergymen and orators, while speaking for any time, would derive great benefit from perfuming their handkerchiefs with Hungary water, as the rosemary it contains excites the mind to vigorous action, sufficient of the stimulant being inhaled by occasionally wiping the face with the handkerchief wetted with these "waters." Shakspeare giving us the key, we can understand how it is that such perfumes containing rosemary are universally said to be "so refreshing!"

RUE. — What our Lord says (Matthew xxiii. 23., and Luke xi. 42.),—"Ye pay tithes of mint and rue, and all manner of herbs, but have omitted the weightier matters of the law," — is indicative that the fragrance of rue had caused it to be grown to an extent sufficient to call for a tithe of it for the church use at a very early period. The odour of rue is exceedingly penetrating and diffusive; on this account it has from time immemorial been esteemed highly prophylactic. The sprigs of rue placed on the bar of the Central Criminal Court will be observed by every visitor to Newgate. The origin of its use there is traced to the time when the prison cell was indeed a never-cleansed den of carnivorous animals. The gaol fever and the gaol distemper were then a natural result of being immured

at Newgate; and, to prevent infection from “the prisoner at the bar” to the “worthy Judge,” the practice of distributing rue throughout the court took its rise; and its use is maintained even to the present day. Happily, however, through better discipline, the hygienic properties of rue are not required; but its presence there is an illustration historically worthy of record by Macaulay or Knight. Rue yields up its odoriferous principle or otto by distillation: its principal use is in the manufacture of aromatic, toilet, hygienic, and cosmetic vinegars.

SAGE. — A powerful-scenting otto can be procured by distillation from any of the *Salviæ*. It is rarely used, but is nevertheless very valuable in combination for scenting soap.

Dried sage-leaves, ground, will compound well for sachets.

SANTAL. — *Santalum album*.

“The santal tree perfumes, when riven,
The axe that laid it low.”

CAMERON.

This is an old favourite with the lovers of scent; it is the wood that possesses the odour. The finest santal wood grows in the island of Timor, and the Santal Wood Islands, where it is extensively cultivated for the Chinese market. In the religious ceremonies of the Brahmins, Hindoos, and Chinese, santal wood is burned, by way of incense, to an extent almost beyond belief. The *Santala* grew plentifully in China, but the continued offerings to

the numerous images of Boodh have almost exterminated the plant from the Celestial Empire; and



Santal Wood.

such is the demand, that it is about to be cultivated in Western Australia, in the expectation of a profitable return, which we doubt not will be realised; England alone would consume tenfold the quantity it does were its price within the range of other perfuming substances. The otto which exists in the santal wood is readily procured by distillation; one hundredweight of good wood will yield about 30 ounces of otto.

The white ant, which is so common in India and China, eating into every organic matter that it comes across, appears to have no relish for santal wood; hence it is frequently made into caskets, jewel-boxes,

deed-cases, &c. This quality, together with its fragrance, renders it a valuable article to the cabinet-makers of the East.

The otto of santal is remarkably dense, and is above all others oleaginous in its appearance, and, when good, is of a dark straw-colour. When dissolved in spirit, it enters into the composition of a great many of the old-fashioned bouquets, such as “Maréchale” and others, the formula of which will be given hereafter. Perfumers thus make what is called

Extrait de Bois de Santal.

Rectified spirits	-	-	-	-	7 pints.
Esprit de rose	-	-	-	-	1 pint.
Essential oil, <i>i. e.</i> otto, of santal			-	-	3 oz.

All those EXTRACTS, made by dissolving the otto in alcohol, are nearly white, or at least only slightly tinted by the colour of the oil used. When a perfumer has to impart a delicate *odeur* to a lady's *mouchoir*, which in some instances costs “no end of money,” and is an object, at any cost, to retain unsullied, it behoves his reputation to sell an article that will not stain a delicate white fabric. Now, when a perfume is made in a direct manner from any wood or herb, as tinctures are made, that is, by infusing the wood in alcohol, there is obtained, besides the odoriferous substance, a solution of colouring and extractive matter, which is exceedingly detrimental to its fragrance, besides seriously staining

any cambric handkerchief that it may be used upon ; and for this reason this latter method should never be adopted, except for use upon silk handkerchiefs.

The odour of santal assimilates well with rose ; and hence, prior to the cultivation of rose-leaf geranium, it was used to adulterate otto of roses ; but is now seldom used for that purpose.

By a “ phonetic ” error, santal is often printed “ sandal,” and “ sandel.”

The otto of santal is often adulterated with castor oil, which, being soluble in spirit, is difficult to detect.

SASSAFRAS. — Some of the perfumers of Germany use a tincture of the wood of the *Laurus Sassafras* in the manufacture of hair-washes and other nostrums ; but as, in our opinion, it has rather a “ physicky ” smell than flowery, we cannot recommend the German recipes. The *Eau Athenienne*, notwithstanding, has some reputation as a hair-water, but is little else than a weak tincture of sassafras.

SPIKE.—French oil of lavender, which is procured from the *Lavandula Spica*, is generally called oil of spike. (See LAVENDER.)

SPIKENARD (*Nardostachys Jatamansi*). — This odoriferous plant belongs to the Valerian order, and although its fragrance is generally considered unpleasant to European nostrils, it is so much admired by Eastern natives that some of the most esteemed Asiatic perfumes are composed of valerian and spikenard. The fragrance of spikenard is frequently mentioned in the Holy Volume. “ While the king

sitteth at his table, my spikenard sendeth forth the smell thereof.”—*Song of Solom.* i. 12. “There came a woman having an alabaster box of ointment of spikenard very precious.”—*Mark* xiv. 3. It is nevertheless almost unknown to English and French perfumers.

STORAX. — Priests and perfumers are very much indebted to that family of plants termed by botanists *Styraceæ*: from one and another of this family vast quantities of odoriferous gums and balsams are procured, which are used for altar incense and for perfuming private dwellings. In commerce there are several kinds of storax: the hard red quality is termed *Jews' incense*; the calamita storax is so named from the Latin *calami* (rushes or quills), in reference to its form in the market. The true storax, however, to which we now refer, is a fragrant balsam which exudes from the wounded *Liquidambar orientale* a shrubby tree common in the south-east of Europe and in Central America.

The odour of storax is the uniting link between— as the late lamented Professor Johnston distinguished them — “the smells we dislike” and the “odours we enjoy;” it connects the fragrance of the jonquille with the stench of coal-tar naphtha: the smell of this latter substance has become familiar, since it is used to dissolve gutta percha, and is commonly known as “solution.” Now the smell of this naphtha certainly ranks with those “we dislike;” yet storax resembles it, “to a smell,” when in

bulk; yet, when divided into such an attenuated form as we conceive odours to be, given out by living plants, then storax resembles the exquisite fragrance of the jonquille and tuberose! So the whirlwind and hurricane become the gentle zephyr that makes the "aspens quiver." So the fire-proof block of iron becomes, when divided, more combustible than gunpowder. So the silken fibre becomes a rope to stay the course of a ship. So the lightning flash becomes the electricity which makes one's "hair stand on end." Quantity is equivalent to an allotropic condition of matter; quantity produces opposite physical effects upon the faculties. About an ounce of storax dissolved in one pint of rectified spirit produces the TINCTURE OF STORAX of the perfumer's laboratory. Its principal use is to give permanence of odour to analogous fragrances that are prepared by maceration: thus extract of tuberose or jonquille, procured by infusing the tuberose pomade in spirit, requires for every pint about one ounce of tincture of storax to be added as a "fixing" to the handkerchief. It is also useful in combination with other scents to imitate certain odours of plants: thus it is found in lily of the valley, &c.

STORAX and TOLU are used in perfumery in the same way as benzoin, namely, by solution in spirit as a tincture. An ounce of tincture of storax, tolu, or benzoin, being added to a pound of any very volatile perfume, gives a degree of permanence to it, and makes it last longer on the handkerchief than

it otherwise would: thus, when any perfume is made by the solution of an otto in spirit, it is usual to add to it a small portion of a substance which is less volatile, such as extract of musk, extract of vanilla, ambergris, storax, tolu, orris, vitivert, or benzoin; the manufacturer using his judgment and discretion as to which of these materials are to be employed, choosing, of course, those which are most compatible with the odour he is making.

The power which these bodies have of “fixing” a volatile substance, renders them valuable to the perfumer, independent of their aroma, which is due in many cases to benzoic and cinnamic acids, slightly modified by an essential oil peculiar to each substance, and which is taken up by the alcohol, together with a portion of resin. When the perfume is put upon a handkerchief, the most volatile bodies disappear first: thus, after the alcohol has evaporated, the odour of the ottos appears stronger; if it contains any resinous body, the ottos are held in solution, as it were, by the resin, and thus retained on the fabric. Supposing a perfume to be made of otto only, without any “fixing” substance, then, as the perfume “dies away,” the olfactory nerve, if tutored, will detect its composition, for it spontaneously analyses itself, no two ottos having the same volatility: thus, make a mixture of rose, jasmine, and patchouly; the jasmine predominates first, then the rose, and, lastly, the patchouly, which will be found hours after the others have disappeared.

SYRINGA. — The flowers of the *Philadelphus coronarius*, or common garden syringa, have an intense odour resembling the orange blossom; so much so, that in America the plant is often termed “mock orange.” A great deal of the pomatum sold as pomade surfin, à la fleur d’orange, by the manufacturers of France, is nothing more than fine suet perfumed with syringa blossoms by the maceration process. Fine syringa pomade could be made in England at a quarter the cost of what is paid for the so-called orange pomatum.

THYME. — All the different species of thyme, but more particularly the lemon thyme, the *Thymus Serpyllum*, as well as the marjorams, origanum, &c., yield by distillation fragrant ottos, that are extensively used by manufacturing perfumers for scenting soaps; though well adapted for this purpose, they do not answer at all in any other combinations. Both in grease and in spirit all these ottos impart a herby smell (very naturally) rather than a flowery one, and, as a consequence, they are not considered *recherché*.

When any of these herbs are dried and ground, they usefully enter into the composition of sachet powders.

TONQUIN, or TONKA. — The seeds of the *Dipterix odorata* are the tonquin or *coumarouma* beans of commerce. When fresh they are exceedingly fragrant, having an intense odour of newly made hay. — The *Anthoxanthum odoratum*, or sweet-smelling vernal grass, to which new hay owes its odour, probably yields identically the same fragrant principle,

and it is remarkable that both tonquin beans and vernal grass, while actually growing, are nearly scentless, but become rapidly aromatic when severed from the parent stock.



Dipterix odorata.



Tonquin Bean, natural size.

Chemically considered, tonquin beans are very interesting, containing, when fresh, a fragrant volatile otto (to which their odour is principally due), benzoic acid, a fat oil, and a neutral principle—*Coumarin*. In perfumery they are valuable, as, when ground, they form with other bodies an excellent and permanent sachet, and, by infusion in spirit, the tincture or extract of tonquin enters into a thousand of the compound essences; but on account of its great strength it must be used with caution, otherwise people say the perfume is “snuffy,” owing to the predominance of the odour and its well-known use in the boxes of those who indulge in the titillating dust.

Extract of Tonquin Bean.

Tonquin beans	-	-	-	-	1 lb.
Rectified spirit	-	-	-	-	1 gallon.

Digest for a month at a summer heat. Even after this maceration they are still useful when dried and ground in those compounds known as POT POURRI, OLLA PODRIDA, &c. The extract of tonquin, like extract of orris and extract of vanilla, is never sold pure, but is only used in the manufacture of compound perfumes. It is the leading ingredient in *Bouquet du Champ*—the Field Bouquet—the great resemblance of which to the odour of the hay-field, renders it a favourite to the lovers of the pastoral.



Tuberose.

TUBEROSE. --- One of the most exquisite odours with which we are acquainted is obtained by *enfleur-*

age from the tuberose flower. It is, as it were, a nosegay in itself, and reminds one of that delightful perfume observed in a well-stocked flower-garden at evening close; consequently it is much in demand by the perfumers for compounding sweet essences.

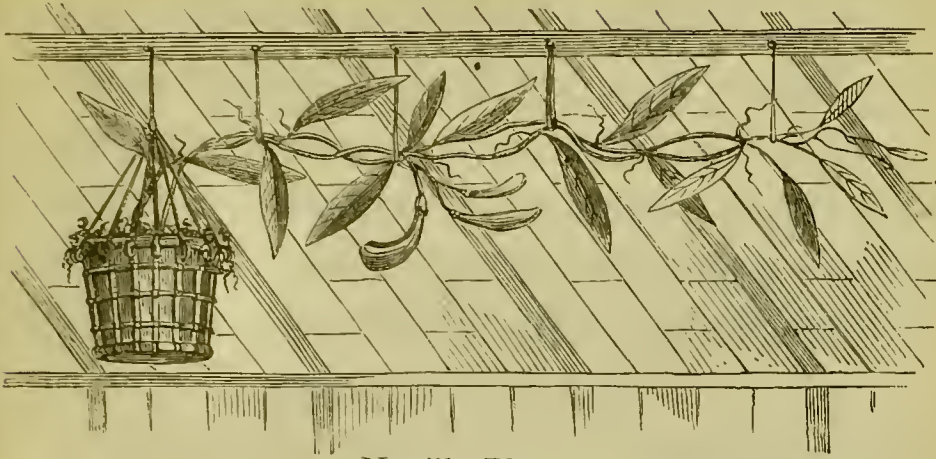
Extract of Tuberose.

Eight pounds of No. 24. tuberose pomatum, cut up very fine, is to be placed into one gallon of the best rectified spirit. After standing for three weeks or a month at summer heat, and with frequent agitation, it is fit to draw off, and, being strained through cotton wool, is ready either for sale or use in the manufacture of bouquets.

This essence of tuberose, like that of jasmine, is exceedingly volatile, and if sold in its pure state quickly “flies off” the handkerchief; it is therefore necessary to add some fixing ingredient, and for this purpose it is best to use one ounce of tincture of storax, or half an ounce of extract of vanilla, to every pint of tuberose.

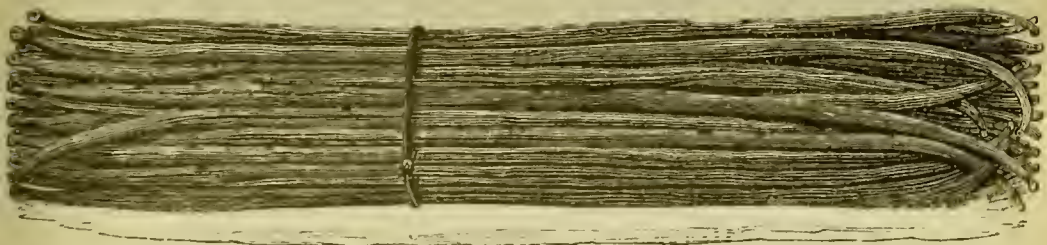
VANILLA.—The pod or bean of the *Vanilla planifolia* yields a perfume of rare excellence. When good, and if kept for some time, it becomes covered with an efflorescence of needle crystals, possessing properties similar to benzoic acid, but differing from it in composition: these crystals may be sublimed by heat of sand bath. Few objects are more beautiful to look upon than this, when viewed by a microscope with the aid of polarised light. The finest vanilla

is grown in Mexico: the pods or beans are about $8\frac{1}{2}$ inches long.



Vanilla Plant.

An inferior quality, the produce of Central America, is often lotted at the drug sales in London. Of this kind, the beans are not more than 7 inches long, and are drier and not so pulpy as the true Mexican variety.



Bundle of Vanilla as imported.

Johnston states that, "physiologically, the fragrance of vanilla acts upon the system as an aromatic stimulant, exhilarating the mental functions, and increasing generally the energy of the animal system." From five to six hundredweight of vanilla are annually imported, on an average, into this country; from some unknown cause, however, this importation is very irregular, and, as a consequence, the price varies considerably, from 30s. per

pound to the present price of 100s. (1856). Our West Indian colonists should look to this! They are deploring the loss of commerce, and we asking for things which *they can produce*, and yet no effort is being made by them to supply European wants. I press this vanilla question on them because Europe would consume a hundred times as much vanilla as it does were the price reduced by an increased production.

Extract of Vanilla.

Vanilla pods	-	-	-	-	$\frac{1}{2}$ lb.
Rectified spirit	-	-	-	-	1 gallon.

Slit the pods from end to end, so as to lay open the interior, then cut them up in lengths of about a quarter of an inch, macerate with occasional agitation for about a month; the tincture thus formed will only require straining through cotton to be ready for any use that is required. In this state it is rarely sold for a perfume, but is consumed in the manufacture of compound odours, bouquets, or nosegays, as they are called.

Extract of vanilla is also used largely in the manufacture of hair-washes, which are readily made by mixing the extract of vanilla with either rose, orange, elder, or rosemary water, and afterwards filtering.

We need scarcely mention that vanilla is greatly used by cooks and confectioners for flavouring.

VERBENA, or VERVAINE.—The scented species of this plant, the lemon verbena, *Aloysia citriodora* (Hooker), gives one of the finest perfumes with which we are acquainted; it is well known as yield-

ing a delightful fragrance by merely drawing the hand over the plant; some of the little vessels or sacs containing the otto must be crushed in this act, as there is little or no odour by merely smelling at the plant.

The otto, which can be extracted from the leaves by distillation with water, on account of its high price, is scarcely, if ever, used by the manufacturing perfumer, but it is most successfully imitated by mixing the otto of lemon grass, *Andropogon Nardus*, with rectified spirit, the odour of which resembles the former to a nicety. The following is a good form for making the

Extrait of Verbena.

Rectified spirit	-	-	-	1 pint.
Otto of lemon grass	-	-	-	3 drachms.
„ lemon peel	-	-	-	2 oz.
„ orange peel	-	-	-	$\frac{1}{2}$ oz.

After standing together for a few hours and then filtering, it is fit for sale.

Another mixture of this kind, presumed by the public to be made from the same plant, but of a finer quality, is composed thus; it is sold under the title

Extrait de Verveine.

Rectified spirit	-	-	-	1 pint.
Otto of orange peel	-	-	-	1 oz.
„ lemon peel	-	-	-	2 oz.
„ citron zeste	-	-	-	1 drachm.
„ lemon grass	-	-	-	$2\frac{1}{2}$ drachms.
Extrait de fleur d'orange	-	-	-	7 oz.
„ „ tubereuse	-	-	-	7 oz.
Esprit de rose	-	-	-	$\frac{1}{2}$ pint.

This mixture is exceedingly refreshing, and is one of the most elegant perfumes that is made. Being white, it does not stain the handkerchief. It is best when sold fresh made, as by age the citrine oils oxidise, and the perfume acquires an ethereal odour, and then customers say "it is sour." The vervaine thus prepared enters into the composition of a great many of the favourite bouquets that are sold under the title "Court Bouquet," and others which are mixtures of violet, rose, and jasmine, with verbena or vervaine in different proportions. In these preparations, as also in eau de Portugal, and in fact where any of the citrine ottos are used, a much finer product is obtained by using grape-spirit or brandy in preference to the English corn-spirit as a solvent for them. Nor do they deteriorate so quickly in French spirit as in English. Whether this be due to the oil of wine (œnanthic ether) or not we cannot say, but think it is so.

VIOLET.—

"The forward violet thus did I chide :

Sweet thief, whence didst thou steal thy sweet that smells,
If not from my love's breath?"

The perfume exhaled by the *Viola odorata* is so universally admired, that to speak in its favour would be more than superfluous. The demand for the "essence of violets" is far greater than the manufacturing perfumers are at present able to supply, and, as a consequence, it is difficult to procure the genuine article through the ordinary sources of trade.

Real violet is, however, sold by many of the retail perfumers of the West End of London, but at a price that prohibits its use except by the affluent or extravagant votaries of fashion. The violet farms from whence the flowers are procured to make this perfume are very extensive at Nice, Sardinia; also in the neighbourhood of Florence. The true smelling principle or otto of violets has recently been isolated by M. March of Nice, a sample of which is to be seen at the Laboratory of Flowers, 2. New Bond Street. A very concentrated solution in alcohol impresses the olfactory nerve with the idea of the presence of hydrocyanic acid, which is probably a true impression. Burnett says that the plant *Viola tricolor* (heart's-ease), when bruised, smells like peach kernels, and doubtless, therefore, contains prussic acid.

It has been remarked, also, that persons who have died from the effects of prussic acid, "smell like violets."

The flowers of the heart's-ease are scentless, but the plant evidently contains a principle which, in other species of the viola, is eliminated as the "sweet that smells" so beautifully alluded to by Shakspeare.

For commercial purposes, the odour of the violet is procured in combination with spirit, oil, or suet, precisely according to the methods previously described for obtaining the aroma of some other flowers before mentioned, such as those for cassie, jasmine, orange-flower, namely, by maceration, or by *enfleurage*; the former method being principally adopted first, fol-

lowed by *enfleurage*, and, when “essence” is required, digesting the pomade in rectified alcohol.

“ Good essence of violets, thus made, is of a beautiful green colour, and, though of a rich deep tint, has no power to stain a white fabric, and its odour is perfectly natural.

ESSENCE OF VIOLETS,

as prepared for retail sale, is thus made, according to the quality and strength of the pomade: — Take from six to eight pounds of the violet pomade, chop it up fine, and place it into one gallon of perfectly clean (free from fusel oil) rectified spirit, allow it to digest for three weeks or a month, then strain off the essence, and to every pint thereof add three ounces of tincture of orris root, and three ounces of esprit de cassie; it is then fit for sale.

On account of the inodorous quality of the English spirit, the essence of violet made in Britain is very superior to the continental violet, which always smells of brandy.

We have often seen displayed for sale in druggists' shops plain tincture of orris root, done up in nice bottles, with labels upon them inferring the contents to be “Extract of Violet;” customers thus once “taken in” are not likely to be so a second time.

A good IMITATION ESSENCE OF VIOLETS is best prepared thus —

Spirituos extract of cassie pomade	-	-	1 pint.
Esprit de rose, from pomade	-	-	$\frac{1}{2}$ „
Tincture of orris	-	-	$\frac{1}{2}$ „
Spirituos extract of tuberose pomade	-	-	$\frac{1}{2}$ „
Otto of almonds	-	-	3 drops.

After filtration it is fit for bottling. In this mixture, it is the extract of cassie which has the leading smell, but modified by the rose and tuberose, it becomes very much like the violet. Moreover, it has a green colour, like the extract of violet; and as the eye influences the judgment by the sense of taste, so it does with the sense of smell. Extract of violet enters largely into the composition of several of the most popular bouquets, such as extract of spring flowers and many others.

VITIVERT, or KUS-KUS, is the rhizome of an Indian grass. In the neighbourhood of Calcutta, and in that city, this material has an extensive use by being manufactured into awnings, blinds, and sunshades, called Tatty. During the hot seasons an attendant sprinkles water over them; this operation cools the apartment by the evaporation of the water, and, at the same time, perfumes the atmosphere, in a very agreeable manner, with the odoriferous principle of the vitivert. It has a smell between the aromatic or spicy odour and that of flowers — if such a distinction can be admitted. We classify it with orris root, not that it has any odour resembling it, but because it has a like effect in use in perfumery, and because it is prepared as a tincture for obtaining its odour.



Vitivert.

About four pounds of the dried vitivert, as it is imported, being cut small and set to steep in a gallon of rectified spirits for a fortnight, produces the

ESSENCE OF VITIVERT of the shops. In this state it is rarely used as a perfume, although it is occasionally asked for by those who, perhaps, have learnt to admire its odour by their previous residence in “the Eastern clime.” The extract, essence, or tincture of vitivert, enters into the composition of several of the much-admired and old bouquets manufactured in the early days of perfumery in England, such as “*Mousseline des Indes*,” for which preparation, M. Delcroix, in the zenith of his fame, created quite a *furor* in the fashionable world.

Essence of vitivert is also made by dissolving 2 oz. of otto of vitivert in 1 gallon of spirit; this preparation is stronger than the tincture, as above.

MARÉCHALE and BOUQUET DU ROI, perfumes which have also “had their day,” owe much of their peculiarity to the vitivert contained in them.

Bundles of vitivert are sold for perfuming linen and preventing moth, and, when ground, it is used to manufacture certain sachet powders.

Otto of vitivert is procurable by distillation; a hundredweight of vitivert yields about 14 oz. of otto, which in appearance very much resembles otto of santal. I have placed a sample of it in the museum at Kew.

VOLKAMERIA. — An exquisite perfume is sold under this name, presumed, of course, to be derived

from the *Volkameria inermis* (Lindley). Whether it has a smell resembling the flower of that plant, or whether the plant blooms at all, we are unable to say. It is a native of India, and seems to be little known even in the botanic gardens of this country; however, the plant has a name, and that's enough for the versatile Parisian perfumer, and if the mixture he makes "takes" with the fashionable world — the plant which christens it has a fine perfume for a certainty!

Essence of Volkameria.

Esprit de violette	-	-	-	-	1 pint.
„ tubereuse	-	-	-	-	1 „
„ jasmine	-	-	-	-	$\frac{1}{4}$ „
„ rose	-	-	-	-	$\frac{1}{2}$ „
Essence de musk	-	-	-	-	2 oz.

WALLFLOWER (*Cheiranthus*).—Exquisite as is the odour of this flower, it is not used in perfumery, though no doubt it might be, and very successfully too, were the plant cultivated for that purpose. To this flower we would direct particular attention, as one well adapted for experiments to obtain its odorous principle in this country, our climate being good for its production. The mode of obtaining its odour has been indicated when we spoke of HELIOTROPE and JASMINE. And if it answers on the small scale, there is little doubt of success in the large way, and there is no fear but that the scent of the old English wallflower will meet with a demand.

AN IMITATION ESSENCE OF WALLFLOWER can be compounded thus:—

Extract fleur d'orange	-	-	-	1 pint.
„ vanilla	-	-	-	$\frac{1}{2}$ „
Esprit de rose	-	-	-	1 „
Extract of orris	-	-	-	$\frac{1}{2}$ „
„ cassie	-	-	-	$\frac{1}{2}$ „
Essential oil of almonds	-	-	-	5 drops.

Allow this mixture to be made up for two or three weeks prior to putting it up for sale.

WINTER GREEN (*Gaultheria procumbens*). — A perfuming otto can be procured by distilling the leaves of this plant: it is principally consumed in the perfuming of soaps. Mr. Bastick remarks, that “the chemical history of this oil is one of great importance and interest, affording, as it does, one of the examples where the progress of modern chemistry has succeeded in producing artificially a complex organic body, previously only known as the result of vital force.

“This volatile oil is obtained from the winter-green, an American shrub of the heath family, by distillation. When this plant is distilled, at first an oil passes over which consists of $C_{10}H_8$, but when the temperature reaches 464° Fahr., a pure oil distils into the receiver. Therefore the essential oil of this plant, like many others, consists of two portions — one a hydro-carbon, and the other an oxygenated compound; this latter is the chief constituent of the oil, and that which is of so much chemical

interest, from the fact that it has been artificially prepared.

“ It is termed, when thus prepared, the spiroylate of the oxide of methyl, and is obtained when two parts of methylene, one and a half parts of spiroylic acid, and one part of sulphuric acid are distilled together. It is a colourless liquid, of an agreeable aromatic odour and taste; it dissolves slightly in water, but in all proportions in ether and alcohol; it boils between 411° and 435° Fahr., and has a specific gravity of 1.173. This compound expels carbonic acid from its combinations, and forms a series of salts, which contain one atom of base and one atom of spiroylate of the oxide of methyl. It behaves therefore as a conjugate acid. Its formula is $C_{14} H_5 O_5 + C_2 H_3 O$.

“ The spiroylic acid may be separated from the natural oil by treating the latter with a concentrated solution of caustic potash at a temperature of 113° Fahr., when wood spirit is formed and evaporates, and the solution contains the spiroylate of potash, from which, when decomposed with sulphuric acid, the spiroylic acid separates and subsides in the fluid.

“ Spiroylic acid is also formed by the oxidation of spiroyligenic acid, and when saligenin, salicin, coumarin, or indigo, is heated with caustic potash.”

Upon the strength of the name of this odorous plant a very nice handkerchief perfume is made, called

Iceland Winter Green.

Esprit de rose	-	-	-	-	1 pint.
Essence of lavender	-	-	-	-	$\frac{1}{4}$ "
Extract of neroly	-	-	-	-	$\frac{1}{2}$ "
" vanilla	-	-	-	-	$\frac{1}{4}$ "
" vitivert	-	-	-	-	$\frac{1}{4}$ "
" cassie	-	-	-	-	$\frac{1}{2}$ "
" ambergris	-	-	-	-	$\frac{1}{4}$ "

ECONOMICAL SCENTS.

As cheap perfumes are often required to fill little fancy bottles, such as are sold at the Bazaars, Toy-shops, Arcades, Wheels of Fortune, and other places, the following recipes for their manufacture will be found of service.

1.					
Spirit of wine	-	-	-	-	1 pint.
Essence bergamot	-	-	-	-	1 ounce.
2.					
Spirit of wine	-	-	-	-	1 pint.
Otto of santal	-	-	-	-	1 ounce.
3.					
Spirit of wine	-	-	-	-	1 pint.
Otto French lavender	-	-	-	-	$\frac{1}{2}$ ounce.
" bergamot	-	-	-	-	$\frac{1}{2}$ "
" Cloves	-	-	-	-	1 drachm.
4.					
Spirit of wine	-	-	-	-	1 pint.
Otto lemon grass	-	-	-	-	$\frac{1}{4}$ ounce.
Essence lemons	-	-	-	-	$\frac{1}{2}$ "
5.					
Spirit of wine	-	-	-	-	1 pint.
Otto petit grain	-	-	-	-	$\frac{1}{4}$ ounce.
" orange peel	-	-	-	-	$\frac{1}{2}$ "

Nearly all these mixtures will require to be filtered through blotting paper, with the addition of a little magnesia, to make them bright. What these scents are to be named, we must leave to abler nomenclaturists.

We have now described all the important odoriferous bodies which are used by the manufacturing perfumer, as derived from the botanic kingdom; it may be understood, that where an odoriferous material is unnoticed, it has no qualities peculiar enough to be remarked on, and that the methods adopted for preparing its essence, extract, water, or oil, are analogous to those that have been already noticed—that is, by the processes of *maceration*, *absorption*, or *enfleurage* for flowers, by *tincturation* for roots, and by *distillation* for seeds, modified under certain circumstances.

There are, however, three other important derivative odours—ambergris, civet, and musk—which, being from the animal kingdom, are treated separately from plant odours, in order, it is considered, to render the whole matter easier for reference to manufacturers who may refer to them. Ammonia and acetic acid, holding an indefinite position in the order we have laid down, may also come in here without much criticism, being considered as primitive odours.

On terminating our remarks relating to the simple preparations of the odours of plants, and before we speak of perfumes of an animal origin, or of those compound *odours* sold as bouquets, nosegays, &c., it may probably be interesting to give a few facts and statistics showing the consumption, in England, of the several substances previously named.

Quantities of Essential Oils, or Ottos, paying 1s. per Pound Duty, entered for Home Consumption in the Year 1852.

Otto of bergamot	-	-	-	-	lbs. 28,574
„ caraway	-	-	-	-	3,602
„ cassia	-	-	-	-	6,163
„ cloves	-	-	-	-	595
„ lavender	-	-	-	-	12,776
„ lemon	-	-	-	-	67,348
„ peppermint	-	-	-	-	16,059
„ roses	-	-	-	-	1,268
„ spearmint	-	-	-	-	163
„ thyme	-	-	-	-	11,418
„ lemon grass	-	-	-	}	- 47,380
„ citronella	-	-	-		
And other ottos not otherwise described					
Total essential oils, or ottos, imported					- 195,346
in one year	-	-	-		

at the duty of 1s. per pound, yield a revenue annually of 9766*l.* 16s.

It would appear by the above return that our consumption of otto of cloves was exceedingly small, whereas it is probably ten times that amount. The fact is, several of the English wholesale druggists are

very large distillers of this otto, leaving little or no room for the sale and importation of foreign distilled otto of cloves. Again, otto of caraway; the English production of that article is quite equal to the foreign: also, otto of lavender, which is drawn in this country probably to the extent of 6000 lbs. annually.

There were also passed through the Custom House for home consumption, in 1852—

Pomatus, procured by enfleurage, maceration, &c., commonly called "French Pomatus,"	}	£
average value of 6s. per pound, and paying a duty of 1s. per pound, valued by the importers		1,306
at - - - - -	}	"
Perfumery not otherwise described; value	-	1,920
Number of bottles of eau de Cologne, paying a duty of 1s. each*	}	19,777

Revenue from eau de Cologne manufactured out of England, say 20,000 flacons at 8*d.* = 8000*l.* annually.

The total revenue derived from various sources, even upon this low scale of duties, from the substances with which "Britannia perfumes her pocket handkerchief," cannot be estimated at less than 40,000*l.* per annum. This, of course, includes the duty upon the spirits used in the home manufacture of perfumery. Previously to 1832, the duty on musk in England was 5*s.* an ounce; in 1842, the duty of 6*d.* an ounce produced 53*l.*, showing that 2120 ounces

* The duty on eau de Cologne is now, according to the last tariff, 8*d.* per flacon of 4 oz., or 20*s.* per gallon.

had been entered for consumption. In 1846 it was declared free of duty. The import now, 1856, is over 3000 ounces.

Levying an excise duty upon odorous substances is not peculiar to England, for it was practised during the Roman Empire. Gibbon says, "There is still extant a long but imperfect catalogue of eastern commodities, which, about the time of Alexander Severus, were subject to the payment of duties — cinnamon, myrrh, and a whole tribe of aromatics."

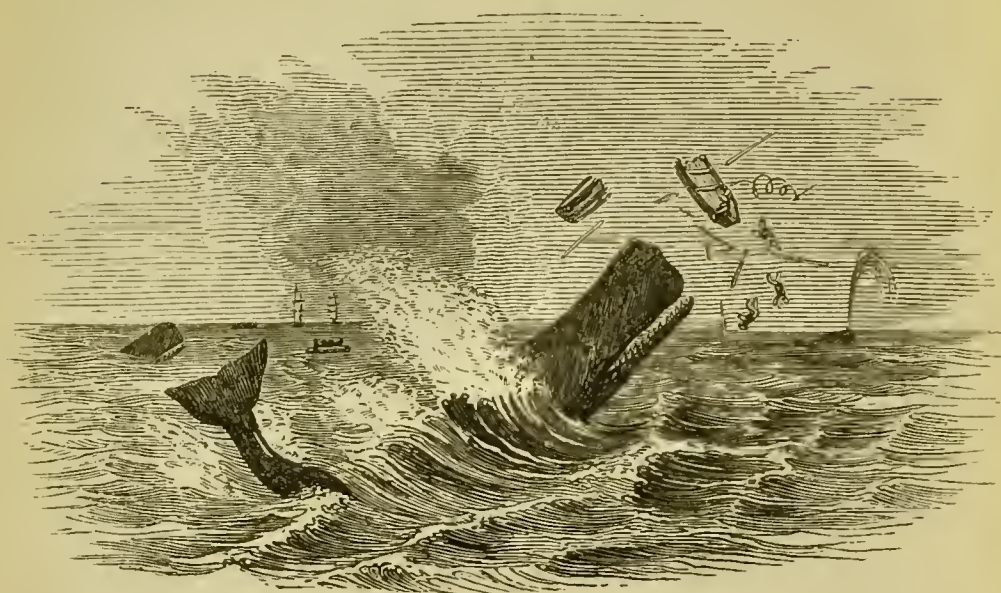
SECTION V.

PERFUMES OF ANIMAL ORIGIN.

IN the previous articles we have only spoken of the odours of plants; we now enter upon those materials used in perfumery of an animal origin. The first under our notice is —

AMBERGRIS. — This substance is found in the sea, floating near the islands of Sumatra, Molucca, and Madagascar; also on the coasts of America, Brazil, China, Japan, and the Coromandel. The western coast of Ireland is often found to yield large pieces of this substance. The shores of the counties of Sligo, Mayo, Kerry, and the Isles of Arran, are the principal places where it has been found. In the “Philosophical Transactions” there is an account of a lump found on the beach of the first-mentioned county, in the year 1691, which weighed 52 oz., and was bought on the spot for 20*l.*, but which afterwards was sold in London for more than 100*l.* (Philos. Trans., No. 227. p. 509.) We are quite within limit in stating that many volumes concerning the origin of ambergris have been written, but the question respecting it is still at issue. It is found in the stomachs of the most voracious fishes, these animals swallowing, at particular times, everything they happen to meet with. It has been particularly found in the intestines of the spermaceti whale, and

most commonly in sickly fish, whence it is supposed to be the cause or effect of the disease.



Sperm or Ambergris Whale.

Some authors, and among them Robert Boyle, consider it to be of vegetable production, and analogous to amber; hence its name *amber-gris* (grey) grey amber. It is not, however, within the province of this work to discuss the various theories about its production, which could probably be satisfactorily explained if our modern appliances were brought to bear upon the subject. The field is open to any scientific enthusiast; all recent authors who mention it, merely quoting the facts known more than a century ago.

A modern compiler, speaking of ambergris, says, "It smells like dried cow-dung." Never having smelled this substance, we cannot say whether the simile be correct; but we certainly consider that its perfume is most incredibly overrated; nor can we

forget that HOMBERG found that “a vessel in which he had made a long digestion of the human faeces had acquired a very strong and perfect smell of ambergris, insomuch that any one would have thought that a great quantity of essence of ambergris had been made in it. The perfume (*odour* ?) was so strong that the vessel was obliged to be moved out of the laboratory.” (Mem. Acad. Paris, 1711.)

Nevertheless, as ambergris is extensively used as a perfume, in deference to those who admire its odour, we presume that it has to many an agreeable smell.

Like bodies of this kind undergoing a slow decomposition and possessing little volatility, it, when mixed with other very fleeting scents, gives permanence to them on the handkerchief, and for this quality the perfumer esteems it much.

Essence of Ambergris.

Spirit	-	-	-	-	-	1 gallon.
Ambergris	-	-	-	-	-	3 oz.

Let it stand for a month.

It is only kept for mixing; when retailed, it has to be sweetened up to the public nose; it is then called after the Parisian name

Extrait d'Ambre.

Esprit de rose triple	-	-	-	-	$\frac{1}{2}$ pint.
Extract of ambergris	-	-	-	-	1 „
Essence of musk	-	-	-	-	$\frac{1}{4}$ „
Extract of vanilla	-	-	-	-	2 ounces.

This perfume has such a lasting odour, that a handkerchief being well perfumed with it, will still retain an odour even after it has been washed.

The fact is, that both musk and ambergris contain a substance which clings pertinaciously to woven fabrics, and not being soluble in weak alkaline leys, is still found upon the material after passing through the laboratory ordeal.

Powdered ambergris is used in the manufacture of cassolettes — little ivory or bone boxes perforated — which are made to contain a paste of strong-smelling substances, to carry in the pocket or reticule; also in the making of *peau d'Espagne*, or Spanish skin, used for perfuming writing-paper and envelopes, and which will be described hereafter.

CIVET. — This substance is secreted by the *Viverra Civetta*, or civet cat. It is formed in a large double glandular receptacle between the anus and the pudendum of the creature. Like many other substances of Oriental origin, it was first brought to this country by the Dutch.

When the civet cats are kept in a state of confinement, which at one time was common in Amsterdam, they are placed in strong cages, so constructed as to prevent the animal from turning round and biting the person employed in collecting the secreted substance. This operation is said to be performed twice a week, and is done by scraping out the civet with a small spoon: about a drachm at a time is thus obtained. A good deal of the civet now brought to European

markets is from Calicut, capital of the province of Malabar, and from Bassora on the Euphrates.



Civet Cat.

Civet must have been used in England in Shakspeare's time, for he mentions it, as also musk, in several plays.

“Give me an ounce of civet.” — *Lear*, iv. 6.

“He rubs himself with civet.” — *Much Ado*, iii. 2.

“Hands are perfumed with civet.” — *As you like it*, iii. 2.

“So sweetly, all musk.” — *Merry Wives*, ii. 2.

In its pure state, civet has, to nearly all persons, a most disgusting odour; but when diluted to an infinitesimal portion, its perfume is agreeable. It is difficult to ascertain the reason why the same substance, modified only by the quantity of matter presented to the nose, should produce an opposite effect on the olfactory nerve; but such is the case with nearly all odorous bodies, especially with ottos which, if smelled at, are far from nice, and in some cases positively nasty — such as otto of neroli, otto

of thyme, otto of patchouly ; but if diluted with a thousand times its volume of oil, spirit, &c., then their fragrance is delightful.

Otto of rose to many has a sickly odour, but when eliminated in the homœopathic quantities, as it rises from a single rose-bloom, who is it that will not admit that “ the rose is sweet ” ? The odour of civet is best imparted, not by actual contact, but by being placed in the neighbourhood of absorbent materials. Thus, when spread upon leather, and placed in a writing-desk, it perfumes the paper and envelopes delightfully, so much so that they retain the odour after passing through the post. “ Valentines ” are thus scented.

EXTRACT OF CIVET is prepared by rubbing in a mortar one ounce of civet with an ounce of orris-root powder, or any other similar material that will assist to break up or divide the civet ; and then placing the whole into a gallon of rectified spirits ; after macerating for a month, it is fit to strain off. It is principally used as a “ fixing ” ingredient, in mixing essences of delicate odour. The French perfumers use the extract of civet more than English manufacturers, who seem to prefer extract of musk. From a quarter of a pint to half a pint is the utmost that ought to be mixed with a gallon of any other perfume.

CASTOR is a secretion of the *Castor Fiber*, or beaver, very similar to civet. Though we have often heard of its being used in perfumery, we do not personally know that such is the case.

MUSK. — This extraordinary substance, like civet, is an animal secretion ; it is contained in excretory follicles about the navel of the male animal. In the perfumery trade these little bags are called “ pods,” and as imported it is called “ pod musk.” When the musk is separated from the skin or sac in which it is contained, it is then called “ grain musk.”



Musk-pod, actual size.

The musk-deer (*Moschus moschatus*) is an inhabitant of the great mountain range which belts the north of India, and branches out into Siberia, Thibet, and China. It is also found in the Altaic range, near Lake Baikal, and in some other mountain ranges, but always on the borders of the line of perpetual snow. It is from the male animal only that the musk is obtained.

It formerly was held in high repute as a medicine, and is still so among Eastern nations. It will be remembered that the newspaper paragraphs told us

that the last dose which the late Emperor Nicholas of Russia swallowed before his death was a potion of musk. The musk from Boutan, Tonquin, and Thibet, is most esteemed; that from Bengal is inferior, and from Russia is of still lower quality. The strength and the quantity produced by a single animal varies with the season of the year and the age of the animal. A single musk-pod usually contains from two to three drachms of grain musk. Musk is imported into England from China, in caddies of from 50 to 100 ounces each. When adulterated with the animal's blood, which is often the case, it forms into lumps or clots; it is sometimes also mixed with a dark, friable earth. Those pods in which little pieces of lead are discovered, as a general rule, yield the finest quality of musk; upon this rule, we presume that the best musk is the most worthy of adulteration. Musk is remarkable for the diffusiveness and subtlety of its scent; everything in its vicinity soon becomes affected by it, and long retains its odour, although not in actual contact with it. For this reason the Hon. East India Company ordered that no musk be brought in the same ship as tea.

The Musk-Deer.

“This little persecuted animal would probably have been left undisturbed to pass a life of peace and quietness in its native forests, but for the celebrated perfume with which nature has provided it. Its skin

being worthless from its small size, the flesh alone would hold out no inducement for the villagers to hunt it while larger game was more easily procurable, and its comparative insignificance would alike have protected it from the pursuit of the European sportsman. As the musk, however, renders it to the Puharries the most valuable of all, no animal is so universally sought after in every place it is known to inhabit. Musk is in demand in nearly every part of the civilized world, yet little, I believe, is known of the nature and habits of the animal that produces it.



The Musk-Deer.

“The musk-deer is rather more than three feet long, and stands nearly two high at the shoulder; but they vary considerably in size, those found in thick shady woods being invariably larger than those on rocky open ground. The head is small, the ears long and erect. The male has a tusk depending

from each upper jaw, which, in a full-grown animal, is about three inches long, the thickness of a goose-quill; sharp pointed, and curving slightly backwards. The general colour is a dark speckled brownish-grey, deepening to nearly black on the hind-quarters, where it is edged down the inside of the thighs with reddish-yellow. The throat, belly, and legs are of a lighter grey. Legs long and slender; toes long and pointed; the hind heels are long, and rest on the ground as well as the toes. The fur is composed of thick spiral hairs, not unlike miniature porcupine-quills; they are very brittle, breaking with a slight pull, and so thickly set, that numbers may be pulled out without altering the outward appearance of the fur. It is white from the roots to nearly the tips, where it gradually becomes dark. The fur is much longer and thicker on the hind parts than the fore, and gives the animal the appearance of being much larger in the hind-quarters than the shoulder. The tail, which is not seen unless the fur is parted, is an inch long, and about the thickness of a thumb; in females and young animals it is covered with hair, but in adult males is quite naked, except a slight tuft at the end; and often covered, as well as all the parts near it, with a yellowish waxy substance.

“ The musk, which is much better known than the deer itself, is only found in adult males; the females have none, neither has any portion of their bodies the slightest odour of musk. The dung of

the males smells nearly as strong as musk, but, singularly enough, neither in the contents of the stomach, nor bladder, nor in any other part of the body, is there any perceptible scent of musk. The pod, which is placed near the navel, and between the flesh and the skin, is composed of several layers of thin skin, in which the musk is confined, and has much the appearance of the craw or stomach of a partridge, or other small gallinaceous bird, when full of food. There is an orifice outwards through the skin, into which, by a slight pressure, the little finger will pass, but it has no connexion whatever with the body. It is probable that musk is at times discharged through this orifice, as the pod is often found not half full, and sometimes even nearly void.”

[From this orifice the dealers extract the grain musk, and then insert in its place the pieces of lead, brass, copper, skin, dried blood, clay, and other adulterations generally found in the pods when opened in England, and from the size of these orifices it can be pretty fairly judged how the pods have been tampered with.—S. P.] “The musk itself is in grains, from the size of a small bullet to small shot, of irregular shape, but generally round or oblong, together with more or less in coarse powder. When fresh it is of a dark reddish-brown colour, but when taken out of the pod and kept for any length of time, becomes nearly black. In autumn and winter the grains are firm, hard, and nearly dry, but in summer they become damp and soft, probably from

the green food the animals then eat. It is formed with the animal, as the pod of a young one, taken out of the womb, is plainly distinguishable, and indeed is much larger in proportion than in grown-up animals. For two years the contents of the pod remain a soft milky substance, with a disagreeable smell. When it first becomes musk, there is not much more than the eighth of an ounce; as the animal grows it increases in quantity, and in some individuals as much as two ounces is found. An ounce may be considered as the average from a full-grown animal; but as many of the deer are killed young, the pods in the market do not perhaps contain, on an average, more than half an ounce. Though not so strong, the musk of young animals has a much pleasanter smell than that of old ones; but difference of food, climate, or situation, as far as my experience goes, does not at all affect the quality.

“From the first high ridge above the plains, to the limits of forest on the snowy range, and for perhaps the whole length of the chain of the Himalayas, the musk-deer may be found upon every hill of an elevation above 8000 feet, which is clothed with forest. On the lower ranges it is comparatively a rare animal, being confined to near the summits of the highest hills, as we approach the colder forests near the snow; but it is nowhere particularly numerous; and its retired and solitary habits make it appear still more rare than it really is. Exclusively a forest animal, it inhabits all kinds of forest indiscriminately,

from the oaks of the lower hills to the stunted bushes near the limits of vegetation. If we may judge from their numbers, the preference seems to be given to the birch forests, where the underwood consists chiefly of the white rhododendron and juniper.

“In many respects they are not unlike hares in habits and economy. Each individual selects some particular spot for its favourite retreat, about which it remains still and at rest throughout the day, leaving it in the evening to search for food, or to wander about, returning soon after daylight. They will occasionally rest for the day in any place where they may happen to be in the morning, but in general they return to near the same spot almost every day, making forms in different quarters of their retreat a little distance from each other, and visiting them in turn. Sometimes they will lie under the same tree or bush for weeks together. They make forms in the same manner as hares, levelling with their feet a spot large enough for the purpose if the ground is too sloping. They seldom, if ever, lie in the sun, even in the coldest weather, and their forms are always made where there is something to shelter them from its rays. Towards evening they begin to move, and during the night appear to wander about a good deal, from top to bottom of the hill, or from one side to another. In the day they are seldom seen moving about. Their nocturnal rambles are apparently as much for recreation as in search of

food, as they often visit regularly some steep ledge of rock or precipice, where there is little or no vegetation. The Puharries believe that they come to such places to play and dance with each other, and often set their snares along the edge of such a ledge or precipice, in preference to the forest.

“ If not walking leisurely and slowly along, the musk-deer always goes in bounds, all fours, leaving and alighting on the ground together. When at full speed, these bounds are sometimes astonishing for so small an animal. On a gentle slope I have seen them clear a space of more than sixty feet at a single bound, for several successive leaps, and spring over bushes of considerable height at the same time. They are very sure-footed, and although a forest animal, in travelling over rocky and precipitous ground, have perhaps no equal. Where even the burrell is obliged to move slowly and carefully, the musk-deer bounds quickly and fearlessly; and although I have often driven them on to rocks which I thought it impossible they could cross, they have invariably found a way in some direction, and I never knew an instance of one missing its footing, or falling, unless wounded.

“ They eat but little compared with other ruminating animals; at least one would imagine so from the small quantity found in their stomachs, the contents of which are always in such a pulpy state that it is impossible to tell what food they prefer. I have often shot them whilst feeding, and found in the

mouth or throat various kinds of shrubs and grasses, and often the long white moss that hangs so luxuriantly from the trees in the higher forests. Roots also seem to form a portion of their food, as they scratch holes in the ground, like many of the hill pheasants. The Puharries believe that the males kill and eat snakes, and feed upon the leaves of the 'kedar patta,' a small and very fragrant smelling laurel, and that the musk is produced by this food. They may probably eat the leaf of this laurel, amongst other shrubs, but from the few occasions upon which I have seen this laurel stripped of any portion of its leaves, it does not appear to afford a very favourite repast. Their killing snakes is doubtless quite fabulous.

“ The young are born either in June or July, and almost every female brings forth yearly, and often twins. These are always deposited in separate places some distance from each other, the dam herself keeping apart from both, and only visiting to give them suck. Should a young one be caught, its bleating will sometimes bring the old one to the spot, but I never knew an instance of one being seen abroad with its dam, or of two young ones being seen together. Their solitary habits are innate, for if a fawn is taken young and suckled by a sheep or goat, it will not for some time associate with its foster-dam, but as soon as satisfied with sucking, seeks some spot for concealment. It is amusing to see them suck; all the while they keep

leaping up and crossing their fore-legs rapidly over each other. They are rather difficult to rear, as many, soon after they are caught, go blind and die.

“ In most of the hill-states the musk-deer is considered as royal property. In some, the Rajahs keep men purposely to hunt it; and in Gurwhal a fine is imposed upon any Puharrie who is known to have sold a musk-pod to a stranger — the Rajah receiving them in lieu of rent.

“ In some districts they are hunted down with dogs, but snaring is by far the most common method practised for their capture. A few are occasionally shot by the village shikaries when in pursuit of other animals, but the matchlock is seldom taken out purposely to hunt musk-deer, for a hill shikarie does not carry the match lighted, and the deer being generally come upon face to face, almost every one would get away before he could strike a light and apply it to the match. In snaring, a fence about three feet high, composed of bushes and branches of trees, is made in the forest, generally along some ridges, and often upwards of a mile in length. Openings for the deer to pass through are left every ten or fifteen yards, and in each a strong hempen snare is placed, tied to a long stick, the thick end of which is firmly fixed in the ground, and the smaller, to which the snare is fastened, bent forwards to the opening, so that the deer, when passing through, treads upon some small sticks which hold it down, the catch is set free, the stick springs back and

tightens the snare round the animal's leg. Besides the musk-deer, numbers of the forest pheasants, moonals, corklass, and argus are caught in these snares; they are visited every third or fourth day, and it is seldom that the owners return without something or other. The polecats often find out the snares, and after once tasting the feast, if not destroyed, soon become a terrible annoyance, tracing the fence almost daily from end to end, and seizing on everything caught; they are often caught themselves, but immediately bite the snare in two and escape. Musk-deer are frequently lost to the snarers in this manner, for when one is eaten by the polecats, the pod is torn to pieces, and the contents scattered on the ground. No animal swallows the musk, and when a deer has been killed and eaten by a leopard or other animal, if the ground be carefully examined, much of the musk may be picked up. Insects and maggots also leave it untouched. I once found what I thought was a newly killed musk-deer, but on examination I discovered it was merely the skin and skeleton of one, which from its dry and withered state must have been dead some months; the flesh had been completely eaten away by maggots, but the musk-pod was entire.

“ The musk-pods which reach the market through the hands of the native hunters are generally enclosed in a portion of the skin of the animal, with the hair or fur left on it. When they have killed a musk-deer, they cut round the pod, and skin the

whole of the belly. The pod comes off attached to the skin, which is then laid with its fleshy side on a flat stone previously heated in the fire, and thus dried without singeing the hair. The skin shrinks up from the heat into a small compass, and is then tied or stitched round the pod, and hung up in a dry place until quite hard. This is the general method of preparing them, but some put the pod into hot oil instead of laying it on a hot stone, but either method must deteriorate the quality of the musk, as it gets either completely baked or fried. It is best both in appearance and smell, if the pod is at once cut from the skin, and allowed to dry of itself.

“ The musk received from the Puharries is greatly adulterated, and pods are often made altogether counterfeit; and as they are generally sold without being cut open, it is scarcely possible to detect the imposture at the time. I have often seen pods offered for sale which were merely a piece of musk-deer skin filled with some substance, and tied up to resemble a musk-pod, with a little musk rubbed over to make it smell. These are easy to detect, from there being no navel on the skin, it being cut from any part of the body. But the musk is sometimes taken out of real pods, and its place supplied by some other substance, and these are difficult to detect even if cut open, as whatever is put in is made to resemble musk in appearance, and a little genuine added makes it smell nearly as strong. Some have

only a portion of the musk taken out, and its place thus supplied; and others have all the musk left in, but something added to increase the weight. Even in the hills where it is produced, so little do the generality of the people know of musk, that I have often seen the Puharries about Gangoutrie sell to the pilgrims, to men from the lower hills, and even to their own neighbours, small portions of what they called musk, but what was merely some substance resembling it, with a little genuine musk scattered over it. Of this stuff they would sell about a quarter of a tolah for a rupee, or about twenty shillings an ounce.

“ The substances commonly used for adulteration or to fill the counterfeit pods are, blood, boiled or baked on the fire, then dried, beaten to powder, kneaded into a paste, and made into grains and coarse powder to resemble genuine musk; a piece of the liver or spleen prepared in the same manner; dried gall, and a particular part of the bark of the apricot-tree, pounded and kneaded as above. The dried paste from which common oil has been extracted, called ‘peena,’ is also used, and lumps of this are often, without further preparation, thrust into a pod through the orifice in the skin, to increase the weight. Sometimes no care is taken to give the material employed in filling a counterfeit pod even the appearance of musk. A gentleman once showed me a pod he had bought from a Puharrie at Missouri; on my telling him it was counterfeit.

he cut it open, and found it filled with hookah tobacco.”*

It is a fashion of the present day for people to say that “they do not like musk;” but, nevertheless, from great experience in one of the largest manufacturing perfumatories in Europe, I am of opinion that the public taste for musk is as great as any perfumer desires. Those substances containing it always take the preference in ready sale — so long as the vendor takes care to assure his customer “that there is no musk in it.”

The perfumer uses musk principally in the scenting of soap, sachet-powder, and in mixing for liquid perfumery. The just reputation of Paris’s original Windsor soap is due, in the main, to its delightful odour. The soap is, doubtless, of the finest quality, but its perfume stamps it among the *élite* — its fragrance it owes to musk.

The alkaline reaction of soap is favourable to the development of the odoriferous principle of musk. If, however, a strong solution of potass be poured on to grain musk, ammonia is developed instead of the true musk smell.

There are three kinds of musk common in the London market. The CABARDIEN or RUSSIAN MUSK, which is rarely, if ever, adulterated; from its poor fragrance, however, it does not fetch more than 8s. an ounce in the pod. The ASSAM MUSK

* Col. Fred. Markham’s (C.B.) Journal of Sporting Adventures and Travel in Chinese Tartary and Thibet.

is next in quality ; it is very strong, but has a rank smell ; the pods are very large and irregular in shape ; fetches about 24s. per ounce in the pod. The TONQUIN or CHINESE MUSK yields the kind mostly prized in England, and is more adulterated than the former ; market price, from 26s. to 32s. per ounce in the pod.



Musk-Deer.

Extract of Musk.

Grain musk	-	-	-	-	2 oz.
Rectified spirit	-	-	-	-	1 gallon.

After standing for one month, at a summer temperature, it is fit to draw off. Such an extract is that which is used for mixing in other perfumes. That extract of musk which is prepared for retail sale is made thus : and sold under the title of

Extrait de Musc.

Extract of musk (as above)	-	-	-	1 pint.
„ ambergris	-	-	-	$\frac{1}{2}$ „
„ rose triple	-	-	-	$\frac{1}{4}$ „

Mix and filter ; it is then fit for bottling.

This preparation is sweeter than pure extract of musk made according to our first formula, and is also more profitable to the vendor. It will be seen hereafter that the original extract of musk is principally used for a fixing ingredient in other perfumes, to give permanence to a volatile odour; customers requiring, in a general way, that which is incom-



patible — namely, that a perfume shall be strong to smell, *i. e.*, very volatile, and that it shall remain upon the handkerchief for a long period, *ergo*, not volatile! Small portions of extract of musk, mixed

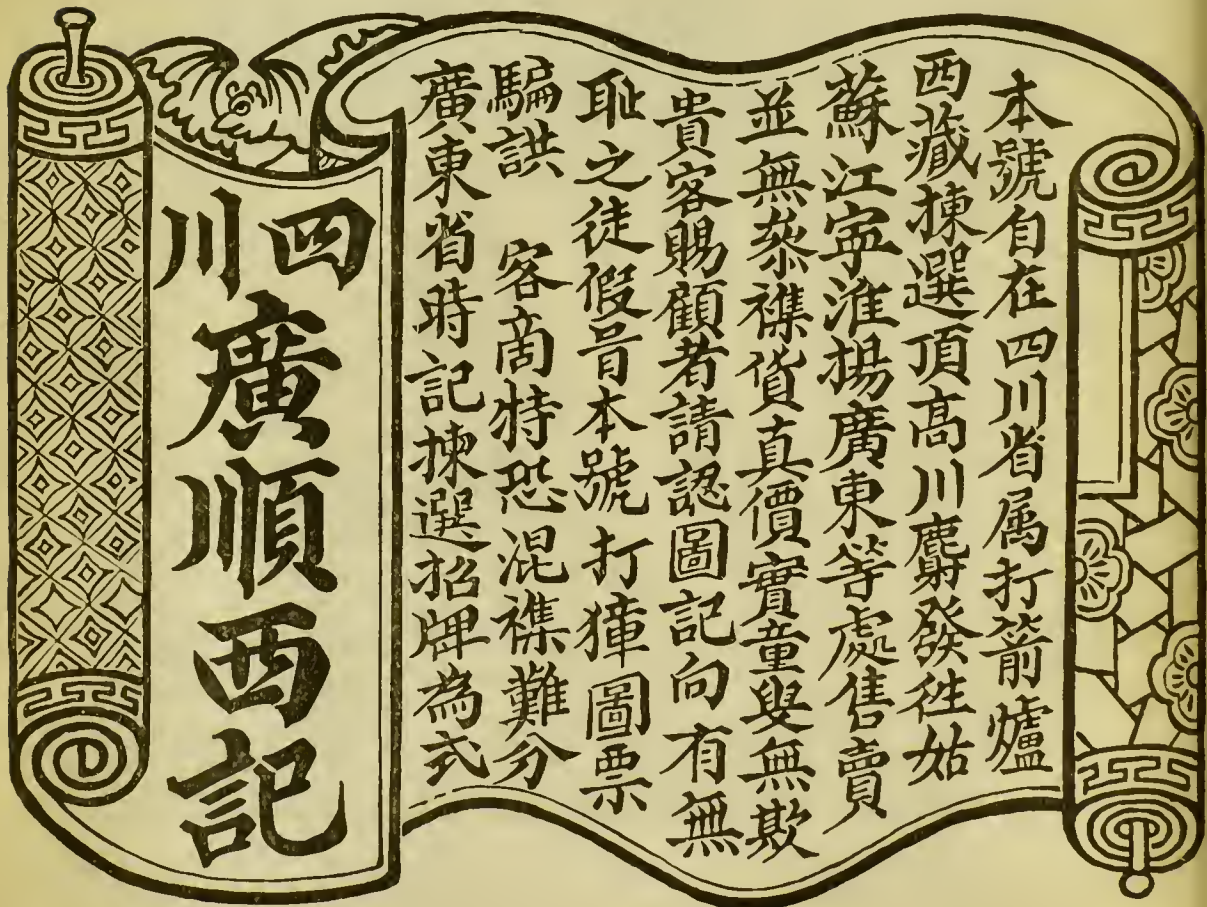
with esprit de rose, violet, tuberose, and others, do, in a measure, attain this object; that is, after the violet, &c., has evaporated, the handkerchief still retains an odour, which, although not that of the original smell, yet gives satisfaction, because it is pleasant to the nasal organ.

In the caddies of Chinese musk which are imported



into this country, there are occasionally found the musk merchants' circulars, or, as they are called, "chop papers," and also, though rarely, a quaint print representing the capture of the animal. Rudely executed as these prints are, they nevertheless teach

us something relating to the methods of obtaining this nasal luxury; the above engravings are "highly finished" copies of an original pair which came together in the same caddy: they show the huntsmen on horseback, the dogs, the bowmen, the arrow-stricken animal, the return of the hunting party, and the "game" suspended on the poles to its last home,—in fact, the whole story is thus told better than words can express.



I am indebted to Mr. Smith, of the firm Smith and Elder, of Cornhill, for the following translation of the above "chop-paper" which was found on

opening an original caddy of musk, of superior quality: by this it would appear that the finest musk in Chinese estimation is from Thibet and from the province of Ta-tseen-loo; it also mentions the principal towns where it is sent for sale.

Translation of Chop-paper.

“ Our firm itself selects the best kind of superior Sze-chuen musk at Ta-tseen-loo, in that province, and in Thibet, from whence we send it, without any admixture, to Soo-chow, Nanking, Hwae-chow, Yang-chow, and Kwang-tung, for sale. Our wares are genuine, our prices true, and neither old nor young are deceived in them. We beg honourable merchants who may favour us with their custom to remember our firm seal, certain shameless scoundrels having falsely assumed our designation, and fraudulently issued notices in order to deceive merchants. Fearing that it may be difficult to distinguish in this confusion, we now, in Kwang-tung, notify the selected designation of our firm, as a rule for guidance.

“ The Kwang-shun-se-ke, firm of Sze-chuen.”

SECTION VI.

AMMONIA.— Under the various titles of “Smelling Salts,” “Preston Salts,” “Inexhaustible Salts,” “Eau de Luce,” “Sal Volatile,” ammonia, mixed with other odoriferous bodies, has been very extensively consumed as material for gratifying the olfactory nerve.

The perfumer uses Liq. Amm. fortis—that is, strong liquid ammonia—and the sesqui-carbonate of ammonia, for preparing the various “salts” that he sells. These materials he does not attempt to make; in fact, it is quite out of his province so to do, but he procures them ready for his hand through some manufacturing chemist. The best preparation for smelling-bottles is what is termed **INEXHAUSTIBLE SALTS**, which is prepared thus:—

Liquid ammonia	-	-	-	-	1 pint.
Otto of rosemary	-	-	-	-	1 drachm.
„ English lavender	-	-	-	-	1 „
„ bergamot	-	-	-	-	$\frac{1}{2}$ „
„ cloves	-	-	-	-	$\frac{1}{2}$ „

Mix the whole together with agitation in a very strong and well-stoppered bottle.

This mixture is used by filling the smelling-bottles with any porous absorbent material, such as asbestos, or, what is better, sponge cuttings that have been

well beaten, washed, and dried. These cuttings can be procured at a nominal price from any of the sponge-dealers, being the trimming or roots of the Turkey sponge, which are cut off before the merchants send it into the retail market. After the bottles are filled with the sponge, it is thoroughly saturated with the scented ammonia, but no more is poured in than the sponge will retain, when the bottles are inverted; as, if by any chance the ammonia runs out and is spilt over certain coloured fabrics, it causes a stain. When such an accident happens, the person who sold it is invariably blamed.

When the sponge is saturated properly, it will retain the ammoniacal odour longer than any other material; hence, we presume, bottles filled in this way are called "inexhaustible," which name, however, they do not sustain more than two or three months with any credit; the warm hand soon dissipates the ammonia under any circumstances, and they require to be refilled.

For transparent coloured bottles, instead of sponge, the perfumers use what they call insoluble crystal salts (sulphate of potass). The bottles being filled with crystals, are covered either with the liquid ammonia, scented as above, or with alcoholic ammonia (alcohol saturated with ammoniacal gas). The necks of the bottles are filled with a piece of white cotton; otherwise, when inverted, from the non-absorbent quality of the crystals, the ammonia runs

out, and causes complaints to be made. The crystals are prettier in coloured bottles than the sponge ; but in plain bottles the sponge appears quite as handsome, and, as before observed, it holds the ammonia better than any other material. Perfumers sell also what is called **WHITE SMELLING SALTS**, and **PRESTON SALTS**. The White Smelling Salt is the sesqui-carbonate of ammonia in powder, with which is mixed any perfuming otto that is thought fit, — lavender otto giving, as a general rule, the most satisfaction.

PRESTON SALTS, which is the cheapest of all the ammoniacal compounds, is composed of some easily decomposable salt of ammonia and lime, such as equal parts of muriate of ammonia, or of sesqui-carbonate of ammonia, and of fresh-slaked lime. When the bottles are filled with this compound, rammed in very hard, a drop or two of some cheap otto is poured on the top prior to corking. For this purpose otto of French lavender, or otto of bergamot, answers very well. We need scarcely mention that the corks are dipped into melted sealing-wax, or brushed over with liquid wax, that is, red or black wax dissolved in alcohol, to which a small portion of ether is added. The only other compound of ammonia that is sold in the perfumery trade is eau de luce, though properly it belongs to the druggist. When correctly made — which is very rarely the case — it retains the remarkable odour of oil of amber, which renders it characteristic.

Eau de Luce.

Tincture of benzoin ; or,	-	-	-	} 1 oz.
„ balsam of Peru	-	-	-	
Otto of lavender	-	-	-	10 drops.
Oil of amber	-	-	-	5 „
Liquor ammonia	-	-	-	2 oz.

If requisite, strain through cotton wool ; but it must not be filtered, as it should have the appearance of a milk-white emulsion.

SNUFF. — Though we advocate the proper use of the olfactory sense, yet we repudiate snuff ; nevertheless we cannot allow this work to go to press without pointing out the analogy between the use of scent and the use of snuff. By a singular perversity of human nature, the snuff-takers declare, almost to the majority of one, that they dislike scent ; we have, however, only to show that snuff is scent in a high degree, and then leave the reader to decide the question.

Two-thirds of the snuff that is taken owes its fragrance to ammonia, the tobacco-leaf merely serving as a medium to bring the ammonia to the nose. The moist tobacco-leaf certainly imparts a peculiar odour to the snuff that is made from it, but still it is to the ammonia that it owes its peculiar pungency. In this respect, then, we can only compare the snuff-box to the ladies' smelling-bottle ; they are both mediums for conveying ammonia, either plain or modified by certain other odorous bodies for the purpose of disguising its real smell, to the olfactory nerve.

The reader will now see our reason for placing snuff in the same section of odoriferous bodies as “smelling salt.”

Like every other substance that is capable of being modified by man, there are snuffs in infinite variety.

The plain snuffs are of two kinds; that is, Scotch and rappee. Irish is but a slight modification of Scotch. The Irish and Scotch snuffs are made from the stalks of the tobacco-leaf, which, in truth, otherwise would be a waste product of cigar manufacture. When the tobacco-leaf is being made into cigars, the stalks and fibres are cut out of the leaf, otherwise it would not roll up properly; when these fibres have accumulated sufficiently, the snuff making process is begun. If the snuff is to become any of the high-dried qualities, then the material has to be sent to an oven, and there dried to that extent required for particular denominations. Lundyfoot is remarkable as being dried almost to the extent of burning, hence this favourite “blackguard” always has a burnt wood smell; after this process it is sent to the snuff-mills, to be ground to titillating dust.

The Irish and common Scotch is made entirely from the stalk of the tobacco-leaf. The *best* Scotch contains a portion of the leaf mixed with the stalk. The moist snuffs are prepared in another way, thus:—After sufficient stalks have accumulated in the manufactory, they are cut up into pieces of about the $\frac{1}{6}$ th to $\frac{1}{8}$ th of an inch in length, and placed in a

large trough, in lots of from one hundredweight to double that quantity. As the material is put in, it is thoroughly moistened with water in which is dissolved, for some varieties, carbonate of ammonia, and for others, muriate of ammonia: in this state it is left to ferment or ripen from about one to two months, according to the weather; in a fortnight or more after this treatment, the material begins to “heat,” and it is now that the future aroma, or *flavour* as the makers term it, is decided; for if it becomes too hot, the ammonia is dissipated, and if not hot enough, then the ammoniacal fragrance is not sufficiently developed. It must be observed that tobacco in any form when moist, and allowed to heat, *produces ammonia* from the elements of its own composition; in this respect it is only like other vegetables containing nitrogenous compounds; the final odour of the snuff depends on the peculiarities of the various tobaccos employed, such as American, Cuban, &c. After the fermentation is complete, the material is sent to the mill to be ground.

“Rappee,” which means little leaf, is considered a finer quality of snuff than the former, and is prepared by similar process; it consists, however, of leaf tobacco, and contains little or no stalk. The ammoniacal smell is much stronger in rappee snuff than in others.

There are, however, several other kinds of snuff, which for their popularity will induce us to claim all who use them—and they are a legion—as patrons

of the “Art of Perfumery.” These are “Prince’s Mixture,” which is a rappee scented with otto of rose; and “Queen’s Scotch,” which is perfumed with bergamot.

The snuff-makers were the first to teach the perfumers to what an extent the fragrance of the Tonquin Bean was admired; even now, if a perfumer makes a mixture containing Tonquin Bean extract in excess, he is charged with making his perfumery smell like snuff.

One of the most delightfully scented snuffs, called “Wallflower,” is made by Messrs. G. and S. Goodes of Spitalfields, who seem determined, in spite of public opinion, to bring snuff into fashion, as it was in the reign of Good Queen Anne.

ACETIC ACID AND ITS USE IN PERFUMERY.—The pungency of the odour of vinegar naturally brought it into the earliest use in the art of Perfumery.

The acetic acid evolved by distilling acetate of copper (verdigris) is the true “aromatic” vinegar of the old alchemists.

The modern aromatic vinegar is the concentrated acetic acid aromatised with various ottos, camphor, &c., thus:—

Aromatic Vinegar.

Concentrated acetic acid	-	-	-	8 oz.
Otto of English lavender	-	-	-	2 drachms.
„ „ rosemary	-	-	-	1 drachm.
„ cloves	-	-	-	1 „
„ camphor	-	-	-	1 oz.

First dissolve the bruised camphor in the acetic acid, then add the perfumes; after remaining together for a few days, with occasional agitation, it is to be strained, and is then ready for use.

Several forms for the preparation of this substance have been published, almost all of which, however, appear to complicate and mystify a process that is all simplicity.

The most popular article of this kind is—

Henry's Vinegar.

Dried leaves of rosemary, rue, wormwood,	}	$\frac{1}{2}$ oz.
sage, mint, and lavender flowers, each		
Bruised nutmeg, cloves, angelica root, and	}	$\frac{1}{4}$ "
camphor, each - - -		
Alcohol (rectified) - - -		4 "
Concentrated acetic acid - - -		16 "

Macerate the materials for a day in the spirit; then add the acid, and digest for a week longer, at a temperature of about 14,c. or 15,c. Finally, press out the now aromatised acid, and filter it.

As this mixture must not go into the ordinary metallic tincture-press, for the obvious reason of the chemical action that would ensue, it is best to drain as much of the liquor away as we can, by means of a common funnel, and then to save the residue from the interstices of the herbs, by tying them up in a linen cloth, and subjecting them to pressure, by means of an ordinary lemon-squeezer or similar apparatus.

Vinaigre à la Rose.

Concentrated acetic acid	-	-	-	1 oz.
Otto of roses	-	-	-	$\frac{1}{2}$ drachm.

Well shaken together.

It is obvious that vinegars differently perfumed may be made in a similar manner to the above, by using other ottos in place of the otto of roses. All these concentrated vinegars are used in the same way as perfumed ammonia—that is, by pouring three or four drachms into an ornamental “smelling” bottle, previously filled with crystals of sulphate of potash, which forms “the sel de vinaigre” of the shops; or upon sponge into little silver boxes, called vinaigrettes from their French origin. The use of these vinegars had their origin in the presumption of keeping those who carried them from the effects of infectious disease, doubtless springing out of the story of the “four thieves’ vinegar,” which is thus rendered in Lewis’s Dispensatory:—

“It is said that during the plague at Marseilles* four persons, by the use of this preservative, attended unhurt multitudes of those that were affected; that, under the colour of these services, they robbed both the sick and the dead; and that being afterwards apprehended, one of them saved himself from the

* To any one who travels its undrained streets, some of which are but open sewers, the wonder is that there is not always a plague there.

gallows by disclosing the composition of the prophylactic*, which was as follows:—

Vinaigre des quatre Voleurs, or Four Thieves' Vinegar.

Take fresh tops of common wormwood,	}	$\frac{3}{4}$ oz.
Roman wormwood, rosemary, sage, mint,		
and rue, of each - - -		
Lavender flowers - - -		1 „
Garlic, calamus aromaticus, cinnamon,	}	1 drachm.
cloves, and nutmeg, each - -		
Camphor - - - -		$\frac{1}{2}$ oz.
Alcohol, or brandy - - -		1 „
Strong vinegar - - - -		4 pints.

Digest all the materials, except the camphor and spirit, in a closely covered vessel for a fortnight, at a summer heat; then express and filter the vinaigre produced, and add the camphor previously dissolved in the brandy or spirit.”

A very similar and quite as effective a preparation may be made by dissolving the odorous principle of the plants indicated, in a mixture of alcohol and acetic acid. Such preparations, however, are more within the province of the druggist than the perfumer. There are, however, several preparations of vinegar which are sold to some extent for mixing with the water for lavatory purposes and the bath, their vendors endeavouring to place them in competition with eau de Cologne, but with little avail. Among them may be enumerated —

* A very likely story !

Hygienic or preventive Vinegar.

Brandy	-	-	-	-	1 pint.
Otto of cloves	-	-	-	-	1 drachm.
„ lavender	-	-	-	-	1 „
„ marjoram	-	-	-	-	$\frac{1}{2}$ „
Gum benzoin	-	-	-	-	1 oz.

Macerate these together for a few hours, then add —

Brown vinegar	-	-	-	-	2 pints
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and strain or filter, if requisite to be bright.

Toilet Vinegar (à la Violette).

Extract of cassie	-	-	-	-	$\frac{1}{2}$ pint.
„ orris	-	-	-	-	$\frac{1}{4}$ „
Esprit de rose, triple	-	-	-	-	$\frac{1}{4}$ „
White wine vinegar	-	-	-	-	2 pints.

Toilet Vinegar (à la Rose).

Dried rose-leaves	-	-	-	-	4 oz
Esprit de rose, triple	-	-	-	-	$\frac{1}{2}$ pint.
White wine vinegar	-	-	-	-	2 pints.

Macerate in a close vessel for a fortnight, then filter and bottle for sale.

Vinaigre de Cologne.

To eau de Cologne	-	-	-	-	1 pint.
Add, strong acetic acid	-	-	-	-	$\frac{1}{2}$ oz.

Piesse and Lubin's Cosmetic Vinegar.

Spirit	-	-	-	-	-	1 quart.
Gum benzoin	-	-	-	-	-	3 oz.
Concentrated Aromatic vinegar	-	-	-	-	-	1 „
Balsam Peru	-	-	-	-	-	1 „
Otto neroli	-	-	-	-	-	1 drachm.
„ nutmeg	-	-	-	-	-	$\frac{1}{2}$ „

This is one of the best that is made.

Without unnecessarily repeating similar formulæ, it will be obvious to the reader that vinegar of any flower may be prepared in a similar way to those above noticed; thus, for vinaigre à la jasmin, or for vinaigre à la fleur d'orange, we have only to substitute the esprit de jasmin, or the esprit de fleur d'orange, in place of the eau de Cologne, to produce orange-flower or jasmine vinegars; however, these latter articles are not in demand, and our only reason for explaining how such preparations may be made, is in order to suggest the methods of procedure to any one desirous of making them leading articles in their trade.

We perhaps may observe, *en passant*, that where economy in the production of any of the toilet vinegars is a matter of consideration, they have only to be diluted with rose-water down to the profitable strength required.

Any of the perfumed vinegars that are required to produce opalescence when mixed with water must contain some gum-resin, like the hygienic vinegar, as above. Either myrrh, benzoin, storax, or tolu answer equally well.

In this place it will perhaps be thought not inappropriate to mention a few words in relation to the

ODOURS OF THE EARTHS.

All those materials which are distinguished in ordinary conversation as earths, give out a peculiar and characteristic odour immediately they are wetted with water. Every pedestrian on the high-road in the country, during the summer months, being "caught in a shower," must have remarked the delightful fragrance that fills the air a few minutes after the rain has fallen, and then passes away. When chalk, or rather whiting, is mixed with water, an odour is evolved which is very persistent, but by no means fragrant to every nose; again, oxides of iron, manganese, and many other bodies in the category of earthy substances, give out odour when wetted. At present we can do no more than simply record the fact, without entering into speculation as to the cause of these phenomena, without indeed it be of a negative kind, in stating that these odours are certainly not due to any matter in the water prior to its touching the earth, for the same result has been noticed when the purest distilled water has been used for the purpose of the experiment; neither can the observation be confined solely to earth and water, for when hydrochloric acid is poured on to oxide of zinc, there is a pleasant odour given out, as a by-product of the combination which then takes place between the acid and zinc oxide.

This matter, full of interest, we leave to the hands of the laboratorians.

SECTION VII.

BOUQUETS AND NOSEGAYS.

IN the previous articles we have endeavoured to explain the mode of preparing the primitive perfumes—the original odours of plants. It will have been observed, that while the majority can be obtained under the form of otto or essential oil, there are others which hitherto have not been isolated, but exist only in solution in alcohol, or in a fatty body. Of the latter are included all that are most prized, with the exception of otto of rose—that diamond among the odoriferous gems. Practically, we have no essential oils or ottos of Jasmine, Vanilla, Acacia, Tuberose, Cassie, Syringa, Violets, and others. What we know of these odours is derived from esprits obtained from oils or fats in which the several flowers have been repeatedly infused, and afterwards infusing such fats or oils in alcohol. Undoubtedly, these odours are the most generally pleasing, while those made from the essential oils (*i. e.* otto) dissolved in spirit are of a secondary character. The simple odours, when isolated, are called ESSENTIAL OILS, or OTTOS; when dissolved or existing in solution in alcohol, by the English they are termed ESSENCES, and by the French EXTRAITS, or ESPRITS; a few exceptions prove this rule. Essential oil of orange-peel, and of

lemon-peel, are frequently termed in the trade "Essence" of orange and "Essence" of lemons, instead of essential oil or otto of lemons, &c. The sooner the correct nomenclature is used in perfumery, as well as in the allied arts, the better, and the fewer blunders will be made in the dispensatory. It appears to the writer, that if the nomenclature of these substances were revised, it would be serviceable; and he would suggest that, as a significant, brief, and comprehensive term, Otto be used as a prefix to denote that such and such a body is the odoriferous principle of the plant. We should then have otto of lavender instead of essential oil of lavender, &c. &c. In this work it will be seen that the writer has generally used the word OTTO in place of "essential oil," in accordance with his views. Where there exists a solution of an essential oil in a fat-oil, the necessity of some such significant distinction is rendered obvious, for commercially such articles are still called "oils"—oil of jasmine, oil of roses, &c. It cannot be expected that the public will use the words "fat" oil and "essential" oil, to distinguish these differences of composition.

These are several good reasons why the odoriferous principle of plants should not be denominated oils. In the first place, it is a bad principle to give any class of substances the same signification as those belonging to another. Surely, there are enough distinguishing qualities in their composition, their physical character, and chemical reaction, to warrant

the application of a significant name to that large class of substances known as the aroma of plants!

When the chemical nomenclature was last revised, the organic bodies were little dealt with. We know that we owe this universal "oil" to the old alchemist, much in the same way as "spirit" has been used, but a little consideration quickly indicates the folly of its continued use. We can no longer call otto of rosemary, or otto of nutmegs, essential oil of rosemary, or nutmegs, with any more propriety than we can term sulphuric acid "oil" of vitriol. All the chemical works speak of the odoriferous bodies as "essential" or "volatile" oils, and of the greasy bodies as "fat" or "unctuous" oils. Oils, properly so called, unite with salifiable bases and form soap; whereas the essential or volatile oils—*i. e.*, what we would please to call the ottos—do no such thing. On the contrary, they unite with acids in the majority of instances.

The word oil must hereafter be confined to those bodies to which its literal meaning refers—fat, unctuous, inodorous (when pure), greasy substances—and can no longer be applied to those odoriferous materials which possess qualities diametrically opposite to oil. We have grappled with "spirit" and fixed its meaning in a chemical sense; we have no longer "spirit" of salt, or "spirit" of hartshorn. Let us no longer have almond oil "essential," almond oil "unctuous," and the like.

It remains only for us to complete the branch of

perfumery which relates to odours for the handkerchief, by giving the formulæ for preparing the most favourite “bouquets” and “nosegays.” These, as before stated, are but mixtures of the simple ottos in spirit, which, properly blended, produce an agreeable and characteristic odour — an effect upon the smelling nerve similar to that which music or the mixture of harmonious sounds produces upon the nerve of hearing, that of pleasure.

The Alhambra Perfume.

Extract of tubereuse	-	-	-	1 pint.
„ geranium	-	-	-	$\frac{1}{2}$ „
„ acacia	-	-	-	$\frac{1}{4}$ „
„ fleur d'orange	-	-	-	$\frac{1}{4}$ „
„ civet	-	-	-	$\frac{1}{4}$ „

The Bosphorus Bouquet.

Extract of acacia	-	-	-	1 pint.
„ jasmine	}	-	of each	-
„ rose, triple				
„ fleur d'orange				
„ tubereuse				
„ civet	-	-	-	$\frac{1}{4}$ „
Otto of almonds	-	-	-	10 drops.

Bouquet d'Amour.

Esprit de rose	}	from pomade, of each	-	1 pint.
„ jasmin				
„ violette				
„ cassie				
Extract of musk	}	-	-	of each
„ ambergris				

Mix and filter.

Bouquet des Fleurs du Val d'Andorre.

Extrait de jasmin	}	from pomade, of each	-	1	pint.
„ rose					
„ violette					
„ tuberoze					
Extract of orris	-	-	-	1	„
Otto of geranium	-	-	-	$\frac{1}{4}$	oz.

Buckingham Palace Bouquet.

Extrait de fleur d'orange	}	from pomade	}	of each	-	1	pint.
„ cassie							
„ jasmin							
„ rose							
Extract of orris	}	-		of each	-	$\frac{1}{2}$	„
„ ambergris							
Otto of neroli	-	-	-	-	$\frac{1}{2}$	drachm.	
„ lavender	-	-	-	-	$\frac{1}{2}$	„	
„ rose	-	-	-	-	1	„	

Bouquet de Caroline; also called Bouquet des Délices.

Extrait de rose	}	from pomade, of each	-	1	pint.		
„ violette							
„ tuberoze							
Extract of orris	}	-		of each	-	$\frac{1}{2}$	„
„ ambergris							
Otto of bergamot	-	-	-	-	$\frac{1}{4}$	oz.	
Citron zeste	-	-	-	-	$\frac{1}{2}$	„	

The Court Nosegay.

Extrait de rose	}	-		of each	-	1	pint.
„ violette							
„ jasmin							
Esprit de rose, triple	-	-	-	-	1	„	
Extract of musk	}	-		of each	-	1	oz.
„ ambergris							
Otto citron zeste	}	-		of each	-	$\frac{1}{2}$	„
„ bergamot							
„ neroli							

Eau de Chypre.

This is an old-fashioned French perfume, presumed to be derived from the *Cyperus esculentus* by some, and by others to be so named after the Island of Cyprus; the article sold, however, is made thus:—

Extract of musk	-	-	-	-	1 pint.
„ ambergris	}	-	of each	-	$\frac{1}{2}$ „
„ vanilla					
„ Tonquin bean					
„ orris					
Esprit de rose triple	-	-	-	-	2 pints.

The mixture thus formed is one of the most lasting odours that can be made.

Empress Eugénie's Nosegay.

Extract of musk	}	-	of each	-	$\frac{1}{4}$ pint.
„ vanilla					
„ Tonquin bean					
„ neroli	}	-	of each	-	$\frac{1}{2}$ „
„ geranium					
„ rose, triple					
„ santal					

Esterhazy Bouquet.

Extrait de fleur d'orange (from pomade)	-	-	-	-	1 pint.
Esprit de rose triple	-	-	-	-	1 „
Extract of vitivert	}	-	-	of each	-
„ vanilla					
„ orris					
„ Tonquin	}	-	-	-	-
Esprit de neroli					
Extract of ambergris					
Otto of santal					
„ cloves	-	-	-	-	$\frac{1}{4}$ „

Notwithstanding the complex mixture here given, it is the vitivert that gives this bouquet its peculiar character. Few perfumes have excited greater *furore* while in fashion.

Ess Bouquet.

The reputation of this perfume has given rise to numerous imitations of the original article, more particularly on the continent. In many of the shops in Germany and in France will be seen bottles labelled in close imitation of those sent out by Bayley and Co., Cockspur Street, London, who are, in truth, the original makers.

Esprit de rose triple	-	-	-	1 pint.
Extract of ambergris	-	-	-	2 oz.
„ orris	-	-	-	8 „
Otto of lemons	-	-	-	$\frac{1}{4}$ „
„ bergamot	-	-	-	1 „

The name “ess” bouquet, which appears to puzzle some folk, is but a mere contraction of “essence” of bouquet.

Eau de Cologne. (La première qualité.)

Spirit (from grape), 60 over proof	-	-	-	6 gallons.
Otto of neroli, <i>pétale</i>	-	-	-	3 oz.
„ „ <i>bigarade</i>	-	-	-	1 „
„ rosemary	-	-	-	2 „
„ orange zeste	-	-	-	5 „
„ citron zeste	-	-	-	5 „
„ bergamot	-	-	-	2 „

Mix with agitation; then allow it to stand for a few days perfectly quiet, before bottling.

Eau de Cologne. (La deuxième qualité.)

Spirit (from corn)	-	-	-	-	6 gallons.
Otto of <i>Petit-grain</i>	-	-	-	-	2 oz.
„ neroli, <i>pétale</i>	-	-	-	-	$\frac{1}{2}$ „
„ rosemary	-	-	-	-	2 „
„ orange peel	}	-	of each	-	4 „
„ lemon					
„ bergamot					

Although eau de Cologne was originally introduced to the public as a sort of “cure-all,” a regular “elixir of life,” it now takes its place, not as a pharmaceutical product, but among perfumery. Of its remedial qualities, we can say nothing, such matter being irrelevant to the purpose of this book. Considered, however, as a perfume, in the public taste it ranks very high; and although it is exceedingly volatile and evanescent, yet it has that excellent quality which is called “refreshing.” Whether this be due to the rosemary or to the spirit, we cannot say, but think something may be attributed to both. One important thing relating to eau de Cologne must not, however, pass unnoticed, and that is, the quality of the spirit used in its manufacture. The utter impossibility of making brandy with English spirit in any way to resemble the real Cognac, is well known. It is equally impossible to make eau de Cologne with English spirit, to resemble the original article. To speak of the “purity” of French spirit, or of the “impurity” of English spirit, is equally absurd. The fact is, that spirit derived from grapes and spirit obtained from corn have each so distinct and

characteristic an aroma, that the one cannot be mistaken for the other. The odour of grape spirit is said to be due to the æanthic ether which it contains. The English spirit, on the other hand, owes its odour to fusel oil. So powerful is the æanthic ether in the French spirit, that notwithstanding the addition to it of such intensely odoriferous substances as the ottos of neroli, rosemary, and others, it still gives a characteristic perfume to the products made containing it, and hence the difficulty of preparing eau de Cologne with any spirit destitute of this substance.

Although very fine eau de Cologne is often made by merely mixing the ingredients as indicated in the recipe as above, yet it is better, first, to mix all the citrine ottos with spirit, and then to distil the mixture, afterwards adding to the distillate the rosemary and nerolies, such process being the one adopted by the most popular house at Cologne.

A great many forms for the manufacture of eau de Cologne have been published, the authors of some of the recipes evidently having no knowledge, in a practical sense, of what they were putting, by theory, on paper; other venturers, to show their lore, have searched out all the aromatics of Lindley's Botany, and would persuade us to use absinthe, hyssop, anise, juniper, marjoram, caraway, fennel, cumin, cardamom, cinnamon, nutmeg, serpolet, angelica, cloves, lavender, camphor, balm, peppermint, galanga, lemon thyme, &c. &c. &c.

All these, however, are but hum——: Where it

is a mere matter of profit, and the formula that we have given is too expensive to produce the article required, it is better to dilute the said Cologne with a weak spirit, or with rose-water, and then filter it through paper with a little magnesia, rather than otherwise alter its form ; because, although weak, the true aroma of the original article is retained.

The recipe of the second quality of eau de Cologne is given, to show that a very decent article can be produced with English spirit.

Flowers of Erin.

Extract of white rose (see WHITE ROSE)	-	1 pint.
„ vanilla - - -	-	1 oz.

Royal Hunt Bouquet.

Esprit de rose triple	-	-	-	1 pint.
„ neroli	}	-	of each	- $\frac{1}{4}$ „
„ acacia				
„ fleur d'orange				
„ musc				
„ orris				
„ Tonquin	-	-	-	$\frac{1}{2}$ „
Otto of citron zeste	-	-	-	2 drachms.

Bouquet de Flora ; otherwise, Extract of Flowers.

Esprit de rose	}	from pomade, of each	1 pint.	
„ tubereuse				
„ violette				
Extract of benzoin	-	-	-	$1\frac{1}{2}$ oz.
Otto of bergamot	-	-	-	2 „
„ citron zeste	}	-	of each	- $\frac{1}{2}$ „
„ orange zeste				

The Guards' Bouquet.

Esprit de rose	-	-	-	-	2 pints.
„ neroli	}	of each	-	-	$\frac{1}{2}$ pint.
Extract of vanilla					
„ orris					
„ musk	-	-	-	-	$\frac{1}{4}$ „
Otto of cloves	-	-	-	-	$\frac{1}{2}$ drachm.

Fleur d'Italie; or Italian Nosegay.

Esprit de rose, from pomade	-	-	-	-	2 pints.
„ rose triple	-	-	-	-	1 pint.
„ jasmin	}	from pomade, each	-	-	1 „
„ violette					
Extract of cassie	-	-	-	-	$\frac{1}{2}$ „
„ musk	}	of each	-	-	2 oz.
„ ambergris					

Jockey Club Bouquet. (English formula.)

Extract of orris root	-	-	-	-	2 pints.
Esprit de rose triple	-	-	-	-	1 pint.
„ rose, de pommade	-	-	-	-	1 „
Extrait de cassie	}	de pommade, of each	-	-	$\frac{1}{2}$ „
„ tubereuse					
„ ambregris	-	-	-	-	$\frac{1}{2}$ „
Otto of bergamot	-	-	-	-	$\frac{1}{2}$ oz.

Jockey Club Bouquet. (French formula.)

Esprit de rose, de pommade	-	-	-	-	1 pint.
„ tubereuse	-	-	-	-	1 „
„ cassie	-	-	-	-	$\frac{1}{2}$ „
„ jasmin	-	-	-	-	$\frac{1}{4}$ „
Extract of civet	-	-	-	-	3 oz.

Independently of the materials employed being different to the original English recipe, it must be

remembered that all the French perfumes are made of brandy, *i. e.*, grape spirit; whereas the English perfumes are made with corn spirit, which alone modifies their odour. Though good for some mixtures, yet for others the grape spirit is very objectionable, on account of the predominance of its own aroma.

We have spoken of the difference in the odour between the English and French spirit; the marked distinction of British and Parisian perfumes made according to the same recipes is entirely due to the different spirits employed. Owing to the strong "bouquet" of the French spirit in comparison with ours, the continental perfumers claim a superiority in the quality of their perfumes, but this aroma in truth is objectionable in many instances. Now, although we candidly admit that *some* odours are better when prepared with grape spirit than with that from corn spirit, yet there are others which are undoubtedly the best when prepared with spirit derived from the latter source. Musk, ambergris, civet, violet, tubereuse, and jasmine, if we require to retain their true aroma when in solution in alcohol, must be made with the British spirit.

All the citrine odours, verveine, vulnary waters, eau de Cologne, eau de Portugal, eau d'Arquebuzade, and lavender, can alone be brought to perfection by using the French spirit in their manufacture. If extract of jasmine, or extract of violet, &c., be made with the French or brandy spirit, the true characteristic odour of the flower is lost to the

olfactory nerve — so completely does the œanthic ether of the grape spirit hide the flowery aroma of the otto of violet in solution with it. This solves the paradox that English extract of violet and its compounds, “Excelsior,” &c., is at all times in demand on the Continent, although the very flowers with which we make it are grown there.

On the contrary, if an English perfumer attempts to make eau de Portugal, &c., to bear any comparison, as a fine odour, to that made by Lubin of Bond Street, London, without using grape spirit, his attempt will prove a failure. True, he makes eau de Portugal even with English corn spirit, but judges of the article — and they alone can stamp its merit — discover instantly the same difference as the connoisseur finds out between “Patent British” and foreign brandy.

Perhaps it may not be out of place here to observe that what is sold in this country as British brandy is in truth grape spirit — that is, foreign brandy very largely mixed with English spirit! By this scheme, a real semblance to the foreign brandy flavour is maintained; the difference in duty upon English and foreign spirit enables the makers of the “capsuled” article to undersell those who vend the unsophisticated Cognac.

Some chemists, not being very deep in the “tricks of trade,” have thought that some flavouring, or that œanthic ether, was used to impart to British spirit the Cognac aroma. An article is even in the

market called "Essence of Cognac," but which is nothing more than very badly made butyric ether.

On the Continent a great deal of spirit is procured by the fermentation of the molasses from beet-root; this, of course, finds its way into the market, and is often mixed with the grape spirit; so, also, in England we have spirit from potatoes which is mixed in the corn spirit. These adulterations, if we may so term them, modify the relative odours of the primitive alcohols.

A Japanese Perfume.

Extract of rose triple	}	of each	-	-	$\frac{1}{2}$ pint.
" vitivert					
" patchouli					
" cedar					
" santal					
" verveine	-	-	-	$\frac{1}{4}$ "	

Kew Garden Nosegay.

Esprit de neroli (<i>pétale</i>)	-	-	-	1 pint.	
" cassie	}	from pomade of each	-	$\frac{1}{2}$ "	
" tubereuse					
" jasmin					
" geranium	-	-	-	$\frac{1}{2}$ "	
" musc	}	-	of each	-	3 oz.
" ambregris					

Eau des Millefleurs.

Esprit de rose triple	-	-	-	1 pint.
" rose de pomnade	}	from pomade	}	of $\frac{1}{2}$ "
" tubereuse				
" jasmin				
" fleur d'orange				
" cassie				
" violette				

Extract of cedar	-	-	-	-	$\frac{1}{4}$ pint.
„ vanilla	}	-	-	of each	-
„ ambergris					
„ musk					
Otto of almonds	}	-	-	of each	-
„ neroli					
„ cloves					
„ Bergamot	-	-	-	-	1 oz.

These ingredients are to remain together for at least a fortnight, then filtered prior to sale.

Millefleurs et Lavender.

Essence of lavender (<i>Mitcham</i> or <i>Hitchin</i>)	-	$\frac{1}{2}$ pint.
Eau des millefleurs	-	1 „

Delcroix's Millefleur Lavender.

Spirits from grape	-	-	-	1 pint.
French otto of lavender	-	-	-	1 oz.
Extract of ambergris	-	-	-	2 „

The original “lavender aux millefleurs” is that of Delcroix; its peculiar odour is due to the French otto of lavender, which, although some folks like it, is very inferior to the English otto of lavender; hence the formula first given is far superior to that by the inventor, and has almost superseded the original preparations.

There are several other compounds or bouquets of which lavender is the leading ingredient, and from which they take their name, such as lavender and ambergris, lavender and musk, lavender and maréchale, &c., all of which are composed of fine spirituous essences of lavender, with about 15 per cent. of any of the other ingredients.

Bouquet du Maréchale.

Esprit de rose triple	}	of each	-	1 pint.		
Extrait de fleur d'orange						
„ vitivert	}	-	-	$\frac{1}{2}$ „		
„ vanilla						
„ orris						
„ Tonquin						
Esprit de neroli						
Extract of musk	}	-	of each	-	$\frac{1}{4}$ „	
„ ambergris						
Otto of cloves	}	-	-	of each	-	$\frac{1}{2}$ drachm.
„ santal						

Eau de Mouscelaine.

Bouquet du maréchale	-	-	-	1 pint.
Extrait de cassie	}	from pomade,	of each	$\frac{1}{2}$ „
„ jasmin				
„ tubereuse				
„ rose				
Otto of santal	-	-	-	2 drachms.

Bouquet de Montpellier.

Extrait de tubereuse	-	-	-	1 pint.	
„ rose de pommade	-	-	-	1 „	
„ rose triple	-	-	-	1 „	
Extract of musk	}	-	of each	-	$\frac{1}{4}$ „
„ ambergris					
Otto of cloves	-	-	-	$1\frac{1}{2}$ drachm.	
„ bergamot	-	-	-	$\frac{1}{2}$ oz.	

Caprice de la Mode.

Extrait de jasmin	}	of each	-	$\frac{1}{2}$ pint.
„ tubereuse				
„ cassie				
„ fleur d'orange				
Otto of almonds	-	-	-	10 drops.
„ nutmegs	-	-	-	10 „
Extract of civet	-	-	-	$\frac{1}{4}$ pint.

May Flowers.

Extract of rose (de pommade)	}	of each	-	$\frac{1}{2}$	pint.
„ jasmine					
„ fleur d'orange					
„ cassie					
„ vanilla	-	-	-	1	„
Otto of almonds	-	-	-	$\frac{1}{4}$	drachm.

Neptune, or Naval Nosegay.

Extrait de rose, triple	}	-	of each	-	$\frac{1}{2}$	pint.
„ santal						
„ vitivert						
„ patchouli						
„ verbena	-	-	-	$\frac{1}{8}$	„	

Bouquet of all Nations.

Nations wherein the
Odours are produced.

TURKEY	-	Esprit de rose triple	-	$\frac{1}{2}$	pint.
AFRICA	-	Extract of jasmine	-	$\frac{1}{2}$	„
ENGLAND	-	„ lavender	-	$\frac{1}{4}$	„
FRANCE	-	„ tubereuse	-	$\frac{1}{2}$	„
SOUTH AMERICA	-	„ vanilla	-	$\frac{1}{4}$	„
TIMOR	-	„ santal	-	$\frac{1}{4}$	„
ITALY	-	„ violet	-	1	„
HINDOOSTAN	-	„ patchouli	-	$\frac{1}{4}$	„
CEYLON	-	Otto of citronella	-	1	drachm
SARDINIA	-	„ lemons	-	$\frac{1}{4}$	oz.
TONQUIN	-	Extract of musk	-	$\frac{1}{4}$	pint.

Isle of Wight Bouquet.

Extract of orris	-	-	-	-	$\frac{1}{2}$	pint.
„ vitivert	-	-	-	-	$\frac{1}{4}$	„
„ santal	-	-	-	-	1	„
„ rose	-	-	-	-	$\frac{1}{2}$	„

Bouquet du Roi.

Extract of jasmine	}	from pomade, of each	1 pint.
„ violet			
„ rose	}	- of each	$\frac{1}{4}$ „
„ vanilla			
„ vitivert			
„ musk			
„ ambergris	}	- of each	1 oz.
Otto of bergamot			
„ cloves	-	-	- 1 drachm.
	-	-	- 1 oz.

Bouquet de la Reine.

Esprit de rose	}	from pomade, of each	1 pint.
Extrait de violette			
„ tubereuse	-	-	- $\frac{1}{2}$ „
„ fleur d'orange	-	-	- $\frac{1}{4}$ „
Otto of bergamot	-	-	- $\frac{1}{4}$ oz.

Rondeletia.

The perfume bearing the above name is undoubtedly one of the most gratifying to the smelling nerve that has ever been made. Its inventors, Messrs. Hannay and Dietrichsen, have probably taken the *name* of this odour from the *Rondeletia*, the *Chyn-len* of the Chinese; or from the *R. odorata* of the West Indies, which has a sweet odour. We have before observed that there is a similarity of effect upon the olfactory nerve produced by certain odours, although derived from totally different sources: that, for instance, otto of almonds may be mixed with extract of violet in such proportion that, although the odour is increased, yet the character peculiar to the violet is not destroyed. Again: there are certain

odours which, on being mixed in due proportion, produce a new aroma, perfectly distinct and peculiar to itself. This effect is exemplified by comparison with the influence of certain colours, when mixed, upon the nerve of vision: such, for instance, as when yellow and blue are mixed, the result we call green; or when blue and red are united, the compound colour is known as puce or violet.

Now when the odour of lavender and odour of cloves are mixed, they produce a new fragrance, *i. e.* *Rondeletia!* It is such combinations that constitute in reality "a new perfume," which, though often advertised, is very rarely attained. Jasmine and patchouli produce a novel aroma, and many others in like manner; proportion and relative strength, when so mixed, must of course be studied, and the substances used accordingly. If the same quantity of any given otto be dissolved in a like proportion of spirit, and the solution be mixed in equal proportions, the strongest odour is instantly indicated by covering or hiding the presence of the other. In this way we discover that patchouli, lavender, neroli, and verbena are the most potent of the vegetable odours, and that violet, tubereuse, and jasmine are the most delicate.

Many persons will at first consider that we are asking too much, when we express a desire to have the same deference paid to the olfactory nerve as to the other nerves that influence our physical pleasures and pains. By tutoring the olfactory nerve, it is capable of perceiving matter in the atmosphere of the

most subtle nature : not only that which is pleasant, but also such as are unhealthful. If an unpleasant odour is a warning to seek a purer atmosphere, surely it is worth while to cultivate that power which enables us to act up to that warning for the general benefit to health.

If we do not do so, some future Macaulay will say of us as David said of the idols, “Noses have they, but they smell not.” Shakspeare tells us

“A good nose is requisite.” — *Winter's Tale*, iv. 3.

Again he observes

“Their very noses had been counsellors.” — *Henry VIII.*; 1.

To return, however, to *Rondeletia*, it will be seen by the annexed formula, that, besides the main ingredients to which it owes its peculiar character—that is, cloves and lavender—it contains musk, vanilla, &c. These substances are used, in these as in nearly all other bouquets, for the sole purpose of fixing the more volatile odours to the handkerchief.

Essence of Rondeletia.

Spirit (60 over proof)	-	-	-	1 gallon.
Otto of lavender	-	-	-	2 oz.
„ cloves	-	-	-	1 „
„ roses	-	-	-	3 drachms.
„ bergamot	-	-	-	1 oz.
Extract of musk	} - - each -			¼ pint.
„ vanilla				
„ ambergris				

The mixture must be made at least a month before

it is fit for sale. Very excellent Rondeletia may also be made by adding $\frac{3}{4}$ dram otto of cloves to a pint of lavender millefleur.

Bouquet Royal.

Extract of rose (from pomade)	-	-	1 pint.
Esprit de rose, triple	-	-	$\frac{1}{2}$ "
Extract of jasmine	}	from pomade, each	-
" violet			
Extract of verbena	}	-	-
" cassie			
Otto of lemons	}	-	-
" bergamot			
Extract of musk	}	-	-
" ambergris			

Suave.

Extract of tubereuse	}	from pomade, each	-	
" jasmine				1 pint.
" cassie				
" rose				
" vanilla	-	-	-	5 oz.
" musk	}	-	-	each - 2 oz.
" ambergris				
Otto of bergamot	-	-	-	$\frac{1}{4}$ "
" cloves	-	-	-	1 drachm.

Spring Flowers.

Extract of rose	}	from pomade, each	-	
" violet				1 pint.
" rose, triple	-	-	-	$2\frac{1}{2}$ oz.
" cassie	-	-	-	$2\frac{1}{2}$ "
Otto of bergamot	-	-	-	2 drachms.
Extract of ambergris	-	-	-	1 oz.

The just reputation of this perfume places it in the first rank of the very best mixtures that have

ever been made by any manufacturing perfumer. Its odour is truly flowery, but peculiar to itself. Being unlike any other aroma, it cannot well be imitated, chiefly because there is nothing that we are acquainted with that at all resembles the odour of the esprit de rose, as derived from macerating rose pomade in spirit, to which, and to the extract of violet, nicely counterpoised, so that neither odour predominates, the peculiar character of “Spring Flowers” is due; the little ambergris that is present gives permanence to the odour upon the handkerchief, although, from the very nature of the ingredients, it may be said to be a fleeting odour. “Spring Flowers” is an Englishman’s invention, but there is scarcely a perfumer in Europe that does not attempt an imitation.

Tulip Nosegay.

Nearly all the tulip tribe, although beautiful to the eye, are inodorous. The variety called the Duc Van Thol, however, yields an exquisite perfume, but it is not used by the manufacturer for the purpose of extracting its odour. He, however, borrows its poetical name, and makes an excellent imitation thus:—

Extract of tubereuse	}	from pomade, each	-	1 pint.
„ violet				
„ rose	-	-	-	- $\frac{1}{2}$ „
„ orris	-	-	-	- 3 oz.
Otto of almonds	-	-	-	- 3 drops.

Violette des Bois.

Under the head Violet, we have already explained the method of preparing the extract or essence of that modest flower. The Parisian perfumers sell a mixture of violet, which is very beautiful, under the title of the *Violette des Bois*, or the Wood Violet, which is made thus: —

Extract of violet	-	-	-	-	1 pint.
„ orris	-	-	-	-	3 oz.
„ cassie	-	-	-	-	3 „
„ rose (from pomade)	-	-	-	-	3 „
Otto of almonds	-	-	-	-	3 drops.

This mixture, in a general way, gives more satisfaction to the customer than the pure violet.

Windsor Castle Bouquet.

Alcohol	-	-	-	-	1 pint.
Otto of neroli	}	-	-	each	$\frac{1}{4}$ oz.
„ rose					
„ lavender					
„ bergamot					
„ cloves	-	-	-	-	8 drops.
Extract of orris	-	-	-	-	1 pint.
„ jasmine	}	-	-	each	$\frac{1}{4}$ „
„ cassie					
„ musk	}	-	-	each	$2\frac{1}{2}$ oz.
„ ambergris					

Yacht Club Bouquet.

Extract of santal	-	-	-	-	1 pint.
„ neroli	-	-	-	-	1 „
„ jasmine	}	-	-	each	$\frac{1}{2}$ „
„ rose, triple					
„ vanilla	-	-	-	-	$\frac{1}{4}$ „
Flowers of benzoin	-	-	-	-	$\frac{1}{4}$ oz.

West End Bouquet.

Extract of cassie	}	-	of each -	1 pint.
„ violet				
„ tuberose				
„ jasmine				
Esprit de rose, triple	-	-	-	3 „
Extract of musk	}	-	-	of each -
„ ambergris				
Otto of bergamot	-	-	-	1 oz.

We have now completed the branch of the art of perfumery which relates to handkerchief perfumes, or wet perfumery. Although we have rather too much encroached upon the space of this work, in giving the composition of so many bouquets, yet there are many left unnoticed which are popular. Those that are given are noted more particularly for the peculiar character of their odour, and are selected from more than a thousand recipes that have been practically tried.

Those readers who require to know anything about the simple extracts of flowers are referred to them under their respective alphabetical titles.

SECTION VII.

THE previous articles have exclusively treated of Wet Perfumes; the present matter relates to Dry Perfumes,—sachet powders, tablets, pastilles, fumigation, by the aid of heat, of volatile odorous resins, &c. &c. The perfumes used by the ancients were, undoubtedly, nothing more than the odoriferous gums which naturally exude from various trees and shrubs indigenous to the Eastern hemisphere: that they were very extensively used and much valued, we have only to read the Scriptures for proofs:—“Who is this that cometh perfumed with myrrh and frankincense, with all the powders of the merchant?” (Song of Solomon, iii. 6.) Abstaining from the use of perfume in Eastern countries is considered as a sign of humiliation.—“And they came and brought tablets.” (Exod. xxxv. 22.) “And it shall come to pass that instead of sweet smell there shall be stink.” (Isaiah, iii. 20. 24.) The word tablets in this passage means perfume boxes, curiously inlaid, made of metal, wood, and ivory. Some of these boxes may have been made in the shape of buildings, which would explain the word *palaces* in Psalm xlv. 8.:—“All thy garments smell of myrrh, and aloes, and cassia, out of the ivory palaces, whereby they have made thee glad.” From what is said in Matt. ii. 11.,

it would appear that perfumes were considered among the most valuable gifts that man could bestow: — “And when they [the wise men] had opened their treasures, they presented unto him [Christ] gifts; gold, and frankincense, and myrrh.” As far as we are able to learn, all the perfumes used by the Egyptians and Persians during the early period of the world were *dry* perfumes, consisting of spikenard (*Nardostachys Jatamansi*), myrrh, olibanum, and other gum resins, nearly all of which are still in use by the manufacturers of odours. Among the curiosities shown at Alnwick Castle is a vase that was taken from an Egyptian catacomb. It is full of a mixture of gum resins, &c., which evolve a pleasant odour to the present day, although probably 3000 years old. We have no doubt that the original use of this vase and its contents was for perfuming apartments, in the same way that pot pourri is now used.

SACHET POWDERS.

The French and English perfumers concoct a great variety of these substances, which, being put into silk bags or ornamental envelopes, find a ready sale, being both good to smell and economical as a means of imparting an agreeable odour to linen and clothes as they lie in drawers. The following formula shows their composition. Every material is either to be ground in a mill, or powdered in a mortar, and afterwards sifted.

Acacia Sachet.

Cassie flower heads	-	-	-	1 lb.
Orris powder	-	.	-	1 „

This is a very nice sachet, and smells something like tea.

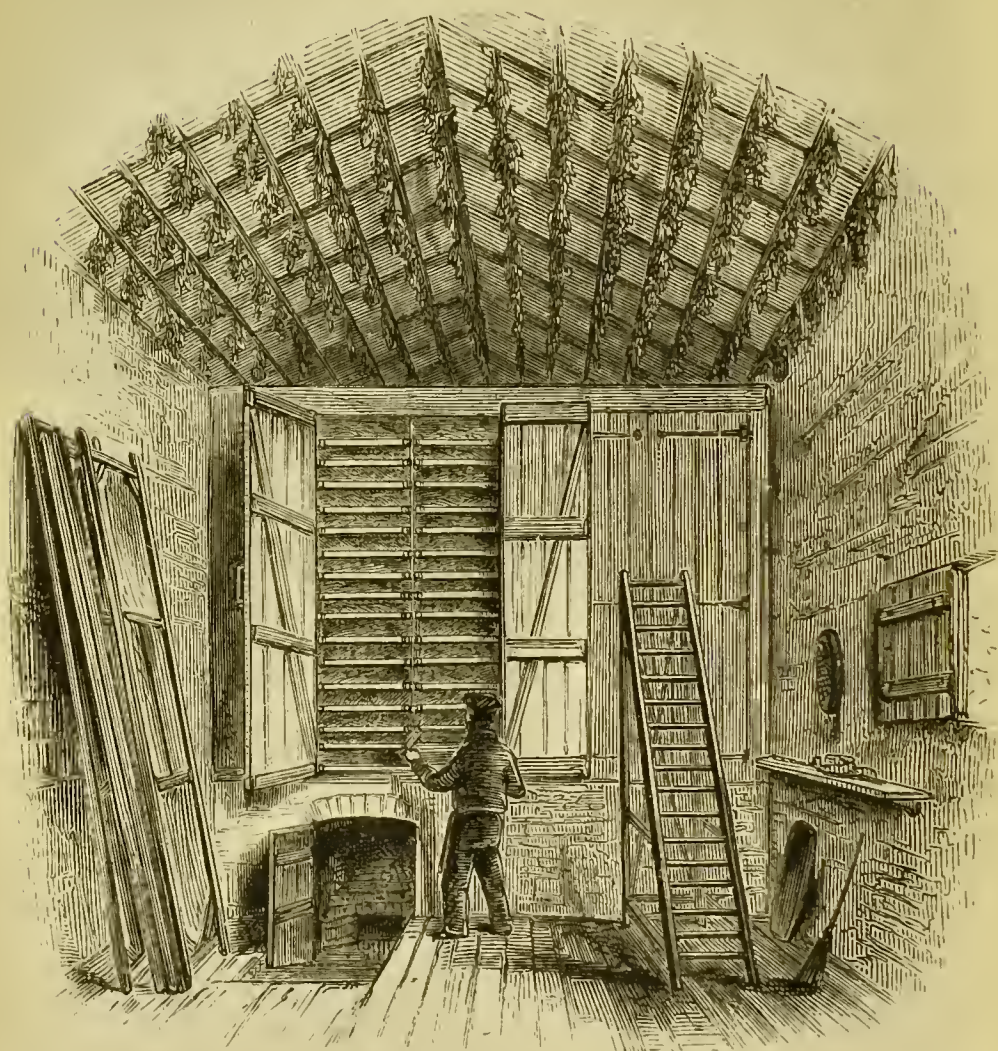
The materials employed in the manufacture of sachet powders are those only which retain an odour or are fragrant in their dried state, which include nearly all that are termed herbs in domestic economy, such as, lemon thyme, mint, &c., and some few leaves of plants, such as those of the orange tree, citron tree, &c. Very few blossoms, however, except lavender, rose, and cassie, have any fragrance when dried. The jasmine, tubereuse, violet, and mignonette, retain none of their primitive smell when thus treated, indicating clearly that the odours of these plants are generated only during their life and are not stored up in their petals, as is the case with the others named.

The engraving below shows the warm air cupboards, where herbs are dried for this purpose.

From the rafters of the roof of the drying-house are suspended in bunches all the herbs that the grower cultivates. To accelerate the desiccation of rose leaves, and other petals, the drying-house is fitted up with large cupboards, which are slightly warmed with a convolving flue from a fire below.

The flower buds are placed upon trays made of canvas, stretched upon a frame, each being not less

than twelve feet long by four feet wide. When



Drying House.

charged, they are placed on shelves in the warm cupboards till dry.

Sachet au Chypre.

Ground rose-wood	-	-	-	-	1 lb.
„ cedar-wood	-	-	-	-	1 „
„ santal-wood	-	-	-	-	1 „
Otto of rhodium, or otto of rose	-	-	-	-	3 drachms.

Mix and sift it; is then fit for sale.

Frangipanni Sachet.

Orris-root powder	-	-	-	-	3 lbs.
Vitivert powder	-	-	-	-	$\frac{1}{4}$ lb.
Santal-wood powder	-	-	-	-	$\frac{1}{4}$ "
Otto of neroli	}	-	-	of each	-
„ rose					
„ santal					
Musk pods, ground	-	-	-	-	1 oz.
„ civet	-	-	-	-	$\frac{1}{4}$ "

The name of this sachet has been handed down to us as being derived from a Roman of the noble family of Frangipanni. Mutio Frangipanni was an alchemist, evidently of some repute, as we have another article called rosolis, or ros-solis, *sun-dew*, an aromatic spirituous liquor, used as a stomachic, of which he is said to have been the inventor, composed of wine in which is steeped coriander, fennel, anise, and musk.

Heliotrope Sachet.

Powdered orris	-	-	-	-	2 lbs.
Rose leaves, ground	-	-	-	-	1 lb.
Tonquin beans, ground	-	-	-	-	$\frac{1}{2}$ "
Vanilla beans	-	-	-	-	$\frac{1}{4}$ "
Grain musk	-	-	-	-	$\frac{1}{4}$ oz.
Otto of almonds	-	-	-	-	5 drops.

When well mixed by sifting in a coarse sieve, it is fit for sale.

It is one of the best sachets made, and is so perfectly *au naturel* in its odour to the flower from which it derives its name, that no person unac-

quainted with its composition would, for an instant, believe it to be any other than the “real thing.”

Lavender Sachet.

Lavender flowers, ground	-	-	-	1 lb.
Gum benzoin, in powder	-	-	-	$\frac{1}{4}$ ”
Otto of lavender	-	-	-	$\frac{1}{4}$ oz.

Maréchale Sachet.

Powder of santal wood	-	-	-	$\frac{1}{2}$ lb.
„ orris root	-	-	-	$\frac{1}{2}$ ”
Rose leaves, ground	-	-	-	$\frac{1}{4}$ ”
Cloves, ground	-	-	-	$\frac{1}{4}$ ”
Cassia bark	-	-	-	$\frac{1}{4}$ ”
Grain musk	-	-	-	$\frac{1}{2}$ drachm.

Mousseline Sachet.

Vitiver, in powder	-	-	-	1 lb.
Santal wood	-	}	-	-
Orris	-			
			each	$\frac{1}{2}$ ”
Black-currant leaves (<i>casse</i>)	-	-	-	$\frac{1}{2}$ ”
Benzoin, in powder	-	-	-	$\frac{1}{4}$ ”
Otto of thyme	-	-	-	5 drops.
„ roses	-	-	-	$\frac{1}{2}$ drachm.

Millefleur Sachet.

Lavender flowers, ground	}	-	-	each	-	1 lb.
Orris						
Rose leaves						
Benzoin						
Tonquin	}	-	-	each	-	$\frac{1}{4}$ ”
Vanilla						
Santal						
Musk and civet	-	-	-	each	-	2 drachms.
Cloves, ground	-	-	-	-	-	$\frac{1}{4}$ lb.
Cinnamon	}	-	-	each	-	2 oz.
Allspice						

Portugal Sachet.

Dried orange peel	-	-	-	-	1 lb.
„ lemon peel	-	-	-	-	$\frac{1}{2}$ „
„ orris root	-	-	-	-	$\frac{1}{2}$ „
Otto of orange peel	-	-	-	-	1 oz.
„ neroli	-	-	-	-	$\frac{1}{4}$ drachm.
„ lemon grass	-	-	-	-	$\frac{1}{4}$ „

Patchouli Sachet.

Patchouli herb, ground	-	-	-	-	1 lb.
Otto of patchouli	-	-	-	-	$\frac{1}{4}$ drachm.

Patchouli herb is often sold in its natural state, as imported, tied up in bundles of half a pound each.

Pot Pourri.

This is a mixture of dried flowers and spices *not* ground.

Dried lavender	-	-	-	-	1 lb.
Whole rose leaves	-	-	-	-	1 „
Crushed orris (coarse)	-	-	-	-	$\frac{1}{2}$ „
Broken cloves	}	-	-	-	each - 2 oz.
„ cinnamon					
„ allspice					
Table salt	-	-	-	-	1 lb.

We need scarcely observe, that the salt is only used to increase the bulk and weight of the product, in order to sell it cheap.

Olla Podrida.

This is a similar preparation to pot pourri. No regular form can be given for it, as it is generally

made, or “knocked up,” with the refuse and spent materials derived from other processes in the manufacture of perfumery; such as the spent vanilla after the manufacture of tincture or extract of vanilla, or of the grain musk from the extract of musk, orris from the tincture, Tonquin beans after tincturation, &c., &c., mixed up with rose-leaves, lavender, or any odoriferous herbs.

Rose Sachet.

Rose heels or leaves	-	-	-	1 lb.
Santal wood, ground	-	-	-	$\frac{1}{2}$ „
Otto of roses	-	-	-	$\frac{1}{4}$ oz.

Santal-wood Sachet.

This is a good and economical sachet, and simply consists of the ground wood. Santal wood is to be purchased from some of the wholesale drysalters; the drug-grinders are the people to reduce it to powder for you; any attempt to do so at home will be found unavailing, on account of its toughness.

Sachet (without a name).

Dried thyme	}	-	-	each	-	$\frac{1}{4}$ lb.
„ lemon thyme						
„ mint						
„ marjoram						
„ lavender	-	-	-	-	$\frac{1}{2}$ „	
„ rose heels	-	-	-	-	1 „	
Ground cloves	-	-	-	-	2 oz.	
Allspice	-	-	-	-	2 oz.	
Musk, in grain	-	-	-	-	1 drachm.	

Vervein Sachet.

Lemon peel, dried and ground	-	-	1 lb.
„ thyme	-	-	$\frac{1}{4}$ „
Otto of lemon grass	-	-	1 drachm.
„ „ peel	-	-	$\frac{1}{2}$ oz.
„ bergamot	-	-	1 „

Vitivert Sachet.

The fibrous roots of the *Anatherum muricatum*, being ground, constitute the sachet bearing the name as above, derived from the Tamool name, *vittie vayer*, and called by the Parisian *vetiver*. Its odour resembles myrrh. Vitivert is more often sold tied up in bunches, as imported from India, than ground, and is used for the prevention of moth rather than as a perfume.

Violet Sachet.

Black-currant leaves	-	-	1 lb.
Cassie flower heads	-	-	1 „
Rose heels or leaves	-	-	1 „
Orris-root powder	-	-	2 lbs.
Otto of almonds	-	-	$\frac{1}{4}$ drachm.
Grain musk	-	-	1 „
Gum benzoin, in powder	-	-	$\frac{1}{2}$ lb.

Well mix the ingredients by sifting; keep them together for a week in a glass or porcelain jar before offering for sale.

There are many other sachets manufactured besides those already given; but for actual trade purposes, there is no advantage in keeping a greater variety than those named. There are, however,

many other substances used in a similar way; the most popular is the

Peau d'Espagne.

Peau d'Espagne, or Spanish skin, is highly perfumed leather, prepared thus:— Good sound pieces of wash-leather are to be steeped in a mixture of ottos, in which are dissolved some odoriferous gum resins:— otto of neroli, otto of rose, santal, of each half an ounce; otto of lavender, verbena, bergamot, of each a quarter of an ounce; otto of cloves and cinnamon, of each two drachms; with any others thought fit. In half a pint of spirit, dissolve about four ounces of gum benzoin, and add it to the mixed ottos: now place the skin to steep in the mixture for a day or so, then remove it, and squeeze out the superfluous scent; finally, let the skin dry by exposure to the air. A paste is now to be made by rubbing in a mortar one drachm of civet with one drachm of grain musk, and enough solution of gum acacia or gum tragacantha to give it a spreading consistence; a little of any of the ottos that may be left from the steep, stirred in with the civet, &c., greatly assists in making the whole of an equal body; the skin, being cut up into pieces of about four inches square, is then to be spread over, plaster fashion, with the last-named compost: two pieces being put together, having the civet plaster inside them, are then to be placed between sheets of paper, weighted or pressed, and left to dry thus for a week; finally,

each double skin, now called *peau d'Espagne*, is to be enveloped in some pretty silk or satin, and finished off to the taste of the vendor.

Skin or leather thus prepared evolves a pleasant odour for years, and hence they are frequently called "the inexhaustible sachet." Being flat, they are much used for perfuming writing-paper.

The lasting odour of Russia leather is familiar to all and pleasing to many; its perfume is due to the aromatic sanders wood, with which it is tanned, and to the empyreumatic oil of the bark of the birch tree, with which it is curried. The odour of Russia leather is, however, not *recherché* enough to be considered as a perfume; but, nevertheless, leather can be impregnated, by steeping in the various ottos, with any sweet scent, and which it retains to a remarkable degree, especially with otto of santal or lemon grass (*Verbena*). In this manner the odour of the *peau d'Espagne* can be greatly varied, and gives great satisfaction, on account of the permanence of its perfume. Another way of making a good flat sachet, is to make a mixture of civet and musk, thinned down by rubbing in a mortar with liquid gum, spreading this compound on card-board; when dry, the card may be plaited over with coloured ribbons.

Perfumed Letter-Paper.

If a piece of *peau d'Espagne* be placed in contact with paper, the latter absorbs sufficient odour to be considered as "perfumed." It is obvious that paper

for writing upon must not be touched with any of the odorous tinctures or ottos, on account of such matters interfering with the fluidity of the ink and action of the pen in writing upon it; therefore, by the process of infection, as it were, alone can writing-paper be perfumed to advantage.

Besides the sachets mentioned, there are many other substances applied as dry perfumery, such as scented wadding, used for quilting into all sorts of articles adapted for use in a lady's boudoir. Pin-cushions, jewel cases, and the like are lined with it. Cotton, so perfumed, is simply steeped in some strong essence, of musk, &c.

Perfumed Book-marks.

We have seen that leather can be impregnated with odoriferous substances, in the manufacture of peau d'Espagne; just so is card-board treated prior to being made up into book-marks. In finishing them for sale, taste alone dictates their design; some are ornamented with beads, others with embroidery.

Cassolettes and Printaniers.

Cassolettes and printaniers are little ivory boxes, of various designs, perforated in order to allow the escape of the odours contained therein. The paste used for filling these "ivory palaces whereby we are made glad," is composed of equal parts of grain musk, ambergris, seeds of the vanilla pod, otto of

roses, and orris powder, with enough gum acacia, or gum tragacantha, to work the whole together into a paste. These things are now principally used for perfuming the pocket or reticule, much in the same way that ornamental silver and gold vinaigrettes are used.

Pastils.

There is no doubt whatever that the origin of the use of pastils, or pastilles, as they are more often



High Priest and Altar.

called, from the French, has been derived from the use of incense at the altars of the temples during the

religious services: — “According to the custom of the priest’s office, his lot [Zacharias’] was to burn incense when he went into the temple of the Lord.” (Luke, i. 9.) “And thou shalt make an altar to burn incense upon. . . . And Aaron shall burn thereon sweet incense every morning: when he dresseth the lamps, and at even when he lighteth the lamps, he shall burn incense upon it.” (Exodus, xxx. 1. 7.)

An analogous practice is in use to the present day in the Roman Catholic churches; but, instead of being consumed upon an altar, the incense is burned in a censer, as doubtless many of our readers have seen. “As soon as the signal was given by the chief priest, the incense was kindled, the holy place was filled with perfume, and the congregation without joined in prayers.” (*Carpenter’s Temple Service of the Hebrews.*)

THE CENSER.

“On the walls of every temple in Egypt, from Meröe to Memphis, the censer is depicted smoking before the presiding deity of the place; on the walls of the tombs glow in bright colours the preparation of spices and perfumes.” In the British Museum there is a vase (No. 2595.) the body of which is intended to contain a lamp, the sides being perforated to admit the heat from the flame to act upon the projecting tubes, which are intended to contain ottos of flowers placed in the small vases at the end of the

tubes; the heat volatilises the ottos, and quickly perfumes an apartment. This vase or censer is from an Egyptian catacomb.

The censer, as used in the "holy places," is made either of brass, German silver, or the precious metals;

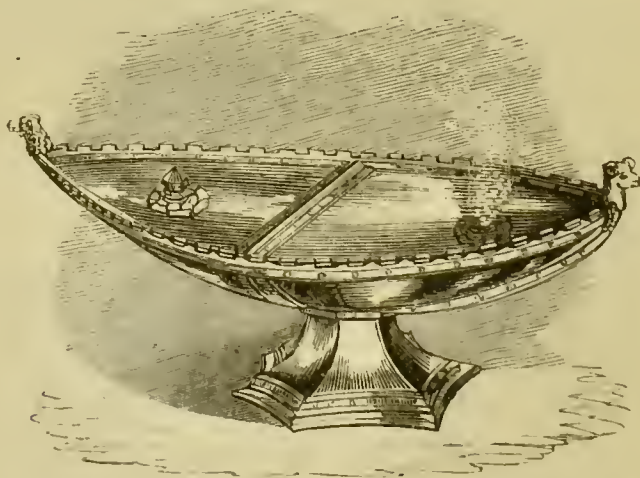


The Censer.

its form is represented in the above engraving, the upper part being perforated to allow the escape of the perfume. In the outer vessel is placed an inner one of copper, which can be taken out and filled with ignited charcoal. When in use, the ignited carbon is placed in the censer, and is then covered with the incense; the heat rapidly volatilises it in visible fumes. The effect is assisted by the incense-

bearer swinging the censer, attached to three long chains, in the air. The manner of swinging the censer varies slightly in the churches in Rome, in France, and in England, some holding it above the head. At LA MADELEINE, the method is always to give the censer a full swing at the greatest length of the chains with the right hand, and to catch it up short with the left hand.

The engraving below represents an ancient incense case and burner, the original of which is in silver, eleven inches long. It is in the possession of William Wells, Esq., of Holme Wood House, Whittlesea, Cambridgeshire. It was found during the draining of Whittlesea Mere. Its form and construction is well suited for the object in view; when not in use, it is an elegant article of vertu for the boudoir, and, when required, contains within the boat the incense



Silver Incense Case, found in Whittlesea
Mere, Cambridgeshire.

and matches for igniting it. It is probable that this article may have belonged to Ramsey Abbey, a

supposition derived from the ram's heads at the fore and stern of the vessel.

Several samples of "incense prepared for altar service," as sent out by Mr. Martin of Liverpool, appear to be nothing more than gum olibanum of indifferent quality, and not at all like the composition as especially commanded by God, the form of which is given in full in Exodus.

The pastils of the moderns are really but a very slight modification of the incense of the ancients. For many years they were called Osselets of Cyprus. In the old books on pharmacy a certain mixture of the then known gum resins was called Suffitus, which being thrown upon hot ashes produced a vapour which was considered to be salutary in many diseases.

It is under the same impression that pastils are now used, or at least to cover the *mal odeur* of the sick chamber.

There is not much variety in the formula of the pastils that are now in use; we have first the

Indian, or Yellow Pastils.

Santal wood, in powder	-	-	-	1 lb.
Gum benzoin	-	-	-	1½ "
„ Tolu	-	-	-	¼ "
Otto of santal	}	-	-	each - 3 drachms.
„ cassia				
„ cloves				
Nitrate of potass	-	-	-	1½ oz.
Mucilage of tragacantha,	<i>q. s.</i> to make the whole into a stiff paste.			

The benzoin, santal wood, and Tolu are to be powdered, and mixed by sifting them, adding the ottos. The nitre, being dissolved in the mucilage, is then added. After well beating in a mortar, the pastils are formed in shape with a pastil mould, and gradually dried.

The Chinese josticks are of a similar composition, but contain no Tolu. Josticks are burned as incense in the temples of Booddh in the Celestial Empire, and to such an extent as to greatly enhance the value of santal wood.

Dr. Paris's Pastils.

Benzoin	}	-	of each	-	$\frac{1}{4}$ lb.
Cascarilla	- }				
Myrrh	-	-	-	-	$1\frac{1}{4}$ oz.
Charcoal	-	-	-	-	$1\frac{1}{2}$ lb.
Otto of nutmegs	}	-	of each	-	$\frac{3}{4}$ oz.
„ cloves	- }				
Nitre	-	-	-	-	2 „

Mix as in the preceding

Perfumers' Pastils.

Well-burned charcoal	-	-	-	-	1 lb.
Benzoin	-	-	-	-	$\frac{3}{4}$ „
Tolu					
Vanilla pods	}	-	of each	-	$\frac{1}{4}$ lb.
Cloves	- }				
Otto of santal	}	-	of each	-	2 drachms.
„ neroli	- }				
Nitre	-	-	-	-	$1\frac{1}{2}$ oz.
Mucilage tragacantha	-	-	-	-	q. s.

Piesse's Pastils.

Willow charcoal	-	-	-	-	$\frac{1}{2}$ lb.
Benzoic acid	-	.	-	-	6 oz.
Otto of thyme	}	-	-		of each - $\frac{1}{2}$ drachm.
„ caraway					
„ rose					
„ lavender					
„ cloves					
„ santal	}				

Prior to mixing, dissolve $\frac{3}{4}$ oz. nitre in half a pint of distilled or ordinary rose water; with this solution thoroughly wet the charcoal, and then allow it to dry in a warm place.

When the thus nitrated charcoal is quite dry, pour over it the mixed ottos, and stir in the flowers of benzoin. When well mixed by sifting (the sieve is a better tool for mixing powders than the pestle and mortar), it is finally beaten up in a mortar with enough mucilage to bind the whole together, and the less that is used the better.

A great variety of formulæ have been published for the manufacture of pastils; nine-tenths of them contain some woods or bark, or aromatic seeds. Now, when such substances are burned, the chemist knows that if the ligneous fibre contained in them undergoes combustion—the slow combustion—materials are produced which have far from a pleasant odour; in fact, the smell of burning wood predominates over the volatilised aromatic ingredients; it is for this reason alone that charcoal is used in lieu of other

substances. The use of charcoal in a pastil is merely for burning, producing, during its combustion, the heat required to quickly volatilise the perfuming material with which it is surrounded. The product of the combustion of charcoal is inodorous, and therefore does not in any way interfere with the fragrance of the pastil. Such is, however, not the case with any ingredients that may be used that are not in themselves perfectly volatile by the aid of a small increment of heat. If combustion takes place, which is always the case with all the aromatic woods that are introduced into pastils, we have, besides the volatilised otto which the wood contains, all the compounds naturally produced by the slow burning of ligneous matter, spoiling the true odour of the other ingredients volatilised.

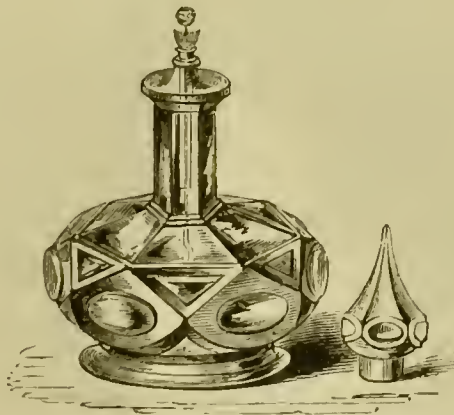
There are, it is true, certain kinds of fumigation adopted occasionally where these products are the materials sought. By such fumigation, as when brown paper is allowed to smoulder—*i. e.* undergo slow combustion—in a room for the purpose of covering bad smells. By the quick combustion of tobacco—that is, combustion with flame—there is no odour developed; but by slow combustion, according to the method adopted by those who indulge in “the weed,” the familiar aroma of the “the cloud,” is generated, and did not exist ready formed in the tobacco. Now a well-made pastil should not develop any odour of its own, but simply volatilise that fragrant matter, whatever it be, used in its manufacture.

We think that the fourth formula given above carries out that object.

It does not follow that the formulæ that are here given produce at all times the odour that is most approved; it is evident that in pastils, as with other perfumes, a great deal depends upon taste. Many persons very much object to the aroma of benzoin, while they greatly admire the fumes of cascarilla.

THE PERFUME LAMP.

Shortly after the discovery of the peculiar property of spongy platinum remaining incandescent in the vapour of alcohol, the late Mr. I. Deck, of Cambridge, made a very ingenious application of it for the purpose of perfuming apartments. An ordinary spirit lamp is filled with Hungary Water, or other



Perfume Lamp.

scented spirit, and “trimmed” with a wick in the usual manner. Over the centre of the wick, and standing about the eighth of an inch above it, a small ball of spongy platinum is placed, maintained

in its position by being fixed to a thin glass rod, which is inserted into the wick.

Thus arranged, the lamp is to be lighted and allowed to burn until the platinum becomes red hot; the flame may then be blown out, nevertheless the platinum remains incandescent for an indefinite period. The proximity of a red-hot ball to a material of the volatile quality of scented spirit, diffused over a surface of a cotton wick, as a matter of course causes its rapid evaporation, and, as a consequence, the diffusion of odour.

Instead of the lamp being charged with Hungary water, we may use eau de Portugal, verveine, or any other spirituous essence. Several perfumers make a particular mixture for this purpose, which is called

Eau à Brûler.

Hungary water, or eau de Cologne	-	-	1 pint.
Tincture of benzoin	-	-	2 oz.
„ vanilla	-	-	1 oz.
Otto of thyme	}	-	of each - $\frac{1}{2}$ drachm.
„ mint			
„ nutmeg			

Another form, called

Eau pour Brûler.

Rectified spirit	-	-	-	1 pint.
Benzoic acid	-	-	-	$\frac{1}{2}$ oz.
Otto of thyme	}	-	-	of each - 1 drachm.
„ caraway				
„ bergamot				

Persons who are in the habit of using the perfume lamps will, however, frequently observe that, whatever difference there may be in the composition of the fluid introduced into the lamp, there is a degree of similarity in the odour of the vapour when the platinum is in action. This arises from the fact, that so long as there is the vapour of alcohol, mixed with oxygen-air, passing over red-hot platinum, certain definite products always result—namely, acetic acid, aldehyde, and acetal, which are formed more or less,—and impart a peculiar and rather agreeable fragrance to the vapour, but which overpowers any other odour that is present.

FUMIGATING PAPER.

There are two modes of preparing this article:—

1. Take sheets of light cartridge paper, and dip them into a solution of alum—say, alum, one ounce; water, one pint. After they are thoroughly moistened, let them be well dried; upon one side of this paper spread a mixture of equal parts of gum benzoin, olibanum, and either balsams of Tolu or Peru, or the benzoin may be used alone. To spread the gum, &c., it is necessary that they be melted in an earthenware vessel and poured thinly over the paper, finally smoothing the surface with a hot spatula. When required for use, slips of this paper are held over a candle or lamp, in order to evaporate the odorous matter, but not to ignite it. The alum in the paper prevents it to a certain extent from burning.

2. Sheets of good light paper are to be steeped

in a solution of saltpetre, in the proportions of two ounces of the salt to 1 pint of water, to be afterwards thoroughly dried.

Any of the odoriferous gums, as myrrh, olibanum, benzoin, &c., are to be dissolved to saturation in rectified spirit, and with a brush spread upon both sides of the paper, or the paper may be dipped into the solution spread out in a broad flat dish, and then, being hung up, rapidly dries.

Slips of this paper are to be rolled up as spills, to be ignited, and then to be blown out.

The nitre in the paper causes a continuance of slow combustion, diffusing during that time the agreeable perfume of the odoriferous gums. If two of these sheets of paper be pressed together before the surface is dry, they will join and become as one. When cut into slips, they form what are called Odoriferous Lighters, or Perfumed Spills.



Seven-branched Candlestick.

The above illustration represents the seven-branched candlestick used in the Temple of Jerusalem. In it were burned fragrant tapers shedding perfume and light around during the holy service. The sketch is taken from the sculpture on the arch of Titus, showing the spoils of the Temple brought by the soldiers at the sacking of the Holy City.

SECTION IX.

PERFUMED SOAP.

THE word soap, or sope, from the Greek *sapon*, first occurs in the works of Pliny and Galen. Pliny informs us that soap was first discovered by the Gauls, that it was composed of tallow and ashes, and that the German soap was reckoned the best. According to Sismondi, the French historian, a soap-maker was included in the retinue of Charlemagne.

At Pompeii (overwhelmed by an eruption of Vesuvius A. D. 79.), a soap-boiler's shop with soap in it was discovered during some excavations made there not many years ago. (*Starke's Letters from Italy.*)

From these statements it is evident that the manufacture of soap is of very ancient origin; indeed, Jeremiah figuratively mentions it — “For though thou wash thee with natron, and take thee much sope, yet thine iniquity is marked before me.” (Jer. ii. 22.) As does also Malachi. “He is like a refiner's fire, and like fullers' sope.” (Mal. iii. 2.)

Mr. Wilson says that the earliest record of the soap trade in England is to be found in a pamphlet in the British Museum, printed in 1641, entitled “A short Account of the Soap Business.” It speaks more particularly about the duty, which was then levied

for the first time, and concerning certain patents which were granted to persons, chiefly Popish recusants, for some pretended new invention of white soap, "which in truth 'was not so." Sufficient is said here to prove that at that time soap-making was no inconsiderable art.

Prior to the removal of the excise duty upon soap, in 1853, it was a commercial impossibility for a perfumer to *manufacture* soap, because the law did not allow less than one ton of soap to be made at a time. This law, which, with certain modifications, had been in force since the reign of Charles I., confined the actual manufacture of that article to the hands of a few capitalists. Such law, however, was but of little importance to the perfumer, as a soap-boiling plant and apparatus is not very compatible with a laboratory of flowers; yet, in some exceptional instances, these excise regulations interfered with him; such, for instance, as that in making soft soap of lard and potash, known, when perfumed, as *Crème d'Amande*; or unscented, as a Saponaceous Cream, which has, in consequence of that law, been entirely thrown into the hands of our continental neighbours.

It would be out of place here to enter into the details of soap-making, because perfumers do not manufacture that substance, but are merely "remelters," to use a trade term. The dyer purchases his dye-stuffs from the drysalters already fabricated, and these are merely modified under his hands to the

various purposes he requires: so with the perfumer; he purchases the various soaps in their raw state from the soap-makers, these he mixes by remelting, then scents and colours according to the article to be produced.

The primary soaps are divided into hard and soft soaps: the hard soaps contain soda as the base; those which are soft are prepared with potash. These are again divisible into varieties, according to the fatty matter employed in their manufacture, also according to the proportion of alkali. The most important of these to the perfumer is what is termed curd soap, as it forms the basis of all the highly-scented soaps.

CURD SOAP is a nearly neutral soap, of pure soda and fine tallow.

OIL SOAP, as made in England, is an uncoloured combination of olive oil and soda, hard, close grain, and contains but little water in combination.

CASTILE SOAP, as imported from Spain, is a similar combination, but is coloured by protosulphate of iron. The solution of the salt being added to the soap after it is manufactured, from the presence of alkali, decomposition of the salt takes place, and protoxide of iron is diffused through the soap of its well-known black colour, giving the familiar marbled appearance to it. When the soap is cut up into bars, and exposed to the air, the protoxide passes by absorption of oxygen into peroxide; hence, a section of a bar of Castile soap shows the outer edge red-marbled while the interior is black-marbled. Some

Castile soap is not artificially coloured, but a similar appearance is produced by the use of a barilla or soda containing sulphuret of the alkaline base, and at other times from the presence of an iron salt.

MARINE SOAP is a cocoa-nut-oil soap, of soda, containing a great excess of alkali, and much water in combination.

YELLOW SOAP is a soda soap, of tallow, resin, of lard, &c. &c.

PALM SOAP is a soda soap of palm oil, retaining the peculiar odour and colour of the oil unchanged. The odoriferous principle of palm oil resembling that from orris-root, can be dissolved out of it by tincturation with alcohol; like ottos generally, it remains intact in the presence of an alkali; hence, soap made of palm oil retains the odour of the oil.

FIG SOFT SOAP is a combination of oils, principally olive oil of the commonest kind, with potash.

NAPLES SOFT SOAP is a fish oil (mixed with Lucca oil) and potash, coloured brown for the London shavers, retaining, when pure, its unsophisticated "fishy" odour.

The public require a soap that will not shrink and change shape after they purchase it. It must make a profuse lather during the act of washing. It must not leave the skin rough after using it. It must be either quite inodorous or have a pleasant aroma. None of the above soaps possess all these qualities in union, and, therefore, to produce such an article is the object of the perfumer in his remelting process.

The above soaps constitute the real body or base

of all the fancy scented soaps as made by the perfumers, which are mixed and remelted according to the following formula.

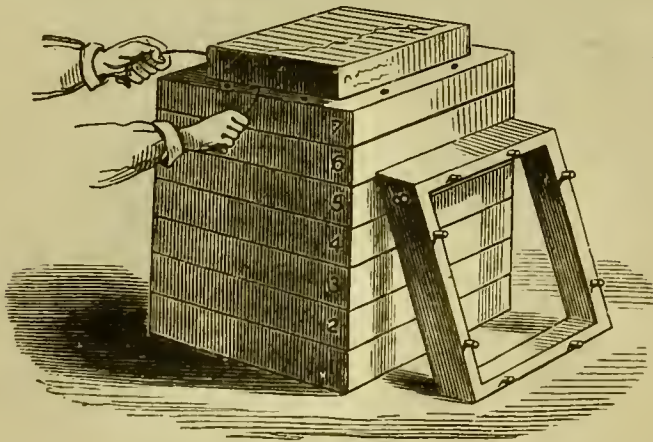
REMELTING SOAP.

The remelting process is exceedingly simple. The bar soap is first cut up into thin slabs, by pressing them against a wire fixed upon the working bench. This cutting wire (piano wire is the kind) is made tort upon the bench by being attached to two screws. These screws regulate the height of the wire from the bench, and hence the thickness of the slabs from the bars. The soap is cut up into thin slabs, because it would be next to impossible to melt a bar whole, on account of soap being one of the worst conductors of heat.

The melting-pan is an iron vessel, of various sizes, capable of holding from 28 lbs. to 3 cwt., heated by a steam jacket, or by a water bath. The soap is put into the pan by degrees, or what is, in the vernacular, called "rounds,"—that is, the thin slabs are placed perpendicularly all round the side of the pan; a few ounces of water are at the same time introduced, the steam of which assists the melting. The pan being covered up, in about half an hour the soap will have "run down." Another round is then introduced, and so continued every half-hour until the whole "melting" is finished. The more water a soap contains, the easier is it melted; hence a round of marine soap, or of new yellow soap, will run down in half the time that it requires for old soap.

When different soaps are being remelted to form one kind when finished, the various sorts are to be put into the pan in alternate rounds, but each round must consist only of one kind, to insure uniformity of condition. As the soap melts, in order to mix it, and to break up lumps, &c., it is from time to time "*crutched*." The "*crutch*" is an instrument or tool for stirring up the soap; its name is indicative of its form, a long handle with a short cross—an inverted \perp , curved to fit the curve of the pan. When the soap is all melted, it is then coloured, if so required, and then the perfume is added, the whole being thoroughly incorporated with the crutch.

The soap is then turned into the "*frame*." The

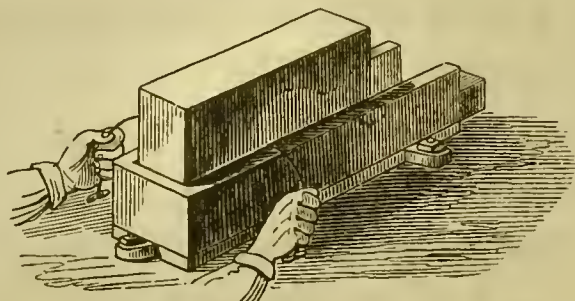


Frame and Slab Gauge.

frame is a box made in sections, in order that it can be taken to pieces, so that the soap can be cut up when cold; the sections or "*lifts*" are frequently made of the width of the intended bar of soap.

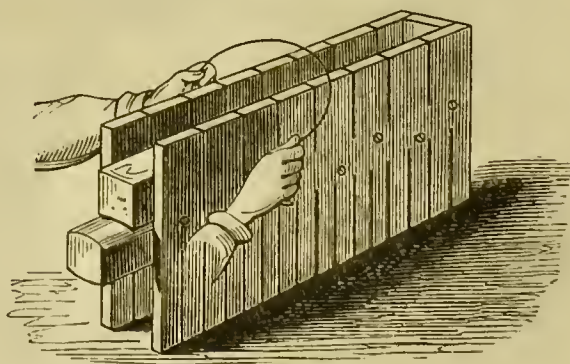
Two or three days after the soap has been in the frame, it is cool enough to cut into slabs of the size

of the lifts or sections of the frame ; these slabs are set up edgeways to cool for a day or two more ; it is then barred by means of a wire. The lifts of the



Barring Gauge.

frame regulates the width of the bars ; the gauge regulates their breadth. The density of the soap being pretty well known, the gauges are made so that the soap-cutter can cut up the bars either into fours, sixes, or eights ; that is, either into squares of four, six, or eight to the pound weight. Latterly,

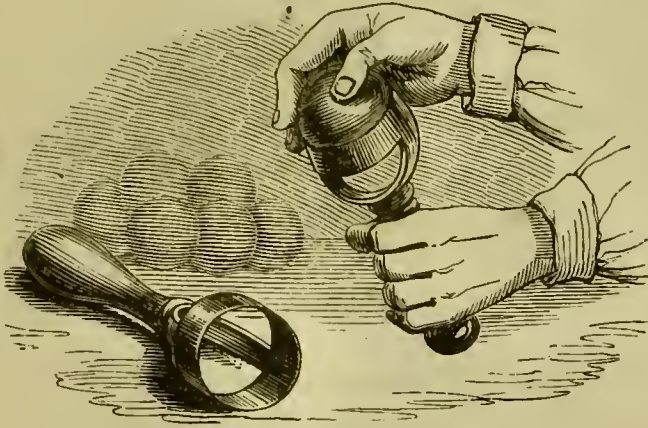


Squaring Gauge.

various mechanical arrangements have been introduced for soap-cutting, which, in very large establishments, such as those at Marseilles, in France, are great economisers of labour ; but in England the “ wire ” is still used.

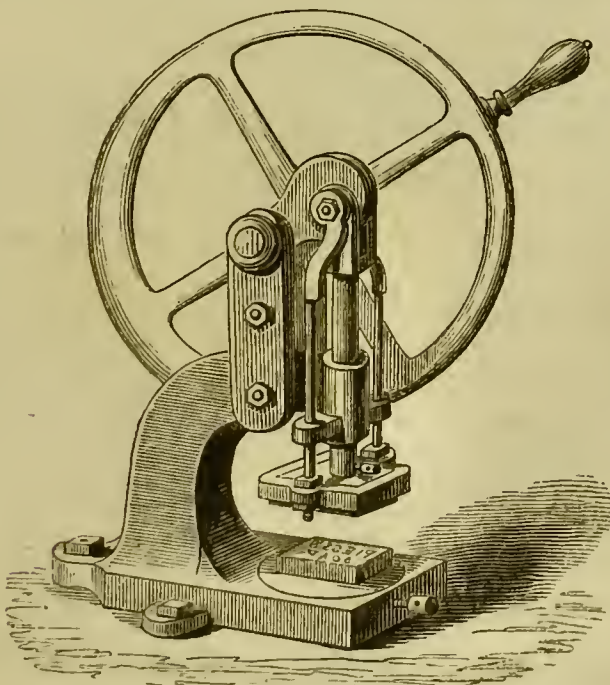
For making tablet shapes, the soap is first cut into

squares, and is then put into a mould, and finally under a press — a modification of an ordinary die or coin press. Balls are cut by hand, with the aid of



Soap Scoop.

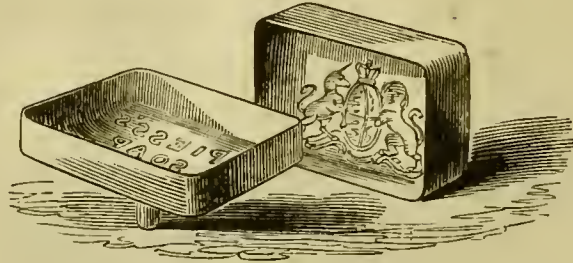
a little tool called a “scoop,” made of brass or ivory, being, in fact, a ring-shaped knife. Balls are also made in the press with a mould of appropriate form.



Soap Press.

The grotesque form and fruit shape are also obtained by the press and appropriate moulds. The fruit-

shaped soaps, after leaving the mould, are dipped into melted wax, and are then coloured according to artificial fruit-makers' rules.



Moulds.

The “variegated” coloured soaps are produced by adding the various colours, such as smalt and vermilion, previously mixed with water, to the soap in a melted state; these colours are but slightly crutched in, hence the streaky appearance or party colour of the soap; this kind is also termed “marbled” soap.

Almond Soap.

This soap, by some persons “supposed” to be made of “sweet almond oil,” and by others to be a mystic combination of sweet and bitter almonds, is in reality constituted thus:—

Finest curd soap	-	-	-	-	1 cwt.
„ oil soap	-	-	-	-	14 lbs.
„ marine	-	-	-	-	14 „
Otto of almonds	-	-	-	-	1½ lb.
„ cloves	-	-	-	-	¼ lb.
„ caraway	-	-	-	-	½ „

By the time that half the curd soap is melted, the marine soap is to be added; when this is well crutched, then add the oil soap, and finish with the remaining curd. When the whole is well melted,

and just before turning it into the frame, crutch in the mixed perfume.

Some of the soap "houses" endeavoured to use Mirabane, or artificial essence of almonds, for perfuming soap, it being far cheaper than the true otto of almonds; but the application has proved so unsatisfactory in practice, that it has been abandoned by Messrs. Gibbs, Pineau (of Paris), Gosnell, and others who used it.

Camphor Soap.

Curd soap	-	-	-	-	28 lbs.
Otto of rosemary	-	-	-	-	1¼ lb.
Camphor	-	-	-	-	1¼ „

Reduce the camphor to powder by rubbing it in a mortar with the addition of an ounce or more of almond oil; then sift it. When the soap is melted and ready to turn out, add the camphor and rosemary, using the crutch for mixing.

Honey Soap.

Best yellow soap	-	-	-	-	1 cwt.
Fig soft soap	-	-	-	-	14 lbs.
Otto of citronella	-	-	-	-	1½ lb.

White Windsor Soap.

Curd soap	-	-	-	-	1 cwt.
Marine soap	-	-	-	-	21 lbs.
Oil soap	-	-	-	-	14 „
Otto of caraway	-	-	-	-	1½ lb.
„ thyme	}	-		of each	1½ lb.
„ rosemary					
„ cassia	}	-		of each	¼ „
„ cloves					

Brown Windsor Soap

Curd soap	-	-	-	-	-	$\frac{3}{4}$ cwt.
Marine soap	-	-	-	-	-	$\frac{1}{4}$ „
Yellow soap	-	-	-	-	-	$\frac{1}{4}$ „
Oil soap	-	-	-	-	-	$\frac{1}{4}$ „
Brown colouring (caramel)	-	-	-	-	-	$\frac{1}{2}$ pint.
Otto of caraway	-	}	-	of each	-	$\frac{1}{2}$ lb.
„ cloves	-					
„ thyme	-					
„ cassia	-					
„ petit grain	-					
„ French lavender	-					

Sand Soap.

Curd soap	-	-	-	-	-	7 lb.
Marine soap	-	-	-	-	-	7 lbs.
Sifted silver sand	-	-	-	-	-	28 „
Otto of thyme	-	}	-	of each	-	2 oz.
„ cassia	-					
„ caraway	-					
„ French lavender	-					

Fuller's Earth Soap.

Curd soap	-	-	-	-	-	10 $\frac{1}{2}$ lbs.
Marine soap	-	-	-	-	-	3 $\frac{1}{2}$ lbs.
Fuller's earth (baked)	-	-	-	-	-	14 lbs.
Otto of French lavender	-	-	-	-	-	2 oz.
„ origanum	-	-	-	-	-	1 oz.

The above forms are indicative of the method adopted for perfuming soaps while hot or melted.

All the very highly scented soaps are, however, perfumed cold, in order to avoid the loss of scent, 20 per cent. of perfume being evaporated by the hot process.

The variously named soaps, from the sublime

“Sultana” to the ridiculous “Turtle’s Marrow,” we cannot of course be expected to notice; the reader may, however, rest assured that he has lost nothing by their omission.

The receipts given produce only the finest quality of the article named. Where cheap soaps are required, not much acumen is necessary to discern that by omitting the expensive perfumes, or lessening the quantity, the object desired is attained. Still lower qualities of scented soap are made by using greater proportions of yellow soap, and employing a very common curd, omitting the oil soap altogether.

SCENTING SOAPS HOT.

In the previous remarks, the methods explained of scenting soap involved the necessity of melting it. The high temperature of the soap under these circumstances involves the obvious loss of a great deal of perfume by evaporation. With very highly scented soaps, and with perfume of an expensive character, the loss of otto is too great to be borne in a commercial sense; hence the adoption of the plan of

SCENTING SOAPS COLD.

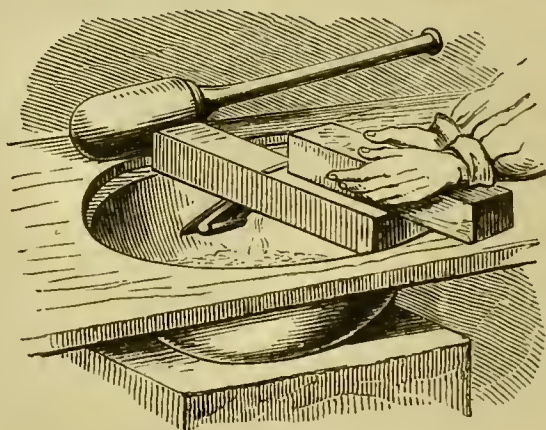
This method is exceedingly convenient and economical for scenting small batches, involving merely mechanical labour, the tools required being simply an ordinary carpenter’s plane and a good marble mortar and lignum vitæ pestle.

The woodwork of the plane must be fashioned at

each end, so that when placed over the mortar it remains firm and not easily moved by the parallel pressure of the soap against its projecting blade.

To commence operations, we take first 7 lbs., 14 lbs., or 21 lbs. of the bars of the soap that it is intended to perfume. The plane is now laid upside down across the top of the mortar.

Things being thus arranged, the whole of the soap is to be pushed across the plane until it is all reduced



Soaping the Plane.

into fine shavings. Like the French "Charbonnier," who does not saw the wood, but woods the saw, so it will be perceived that in this process we do not plane the soap, but that we soap the plane, the shavings of which fall lightly into the mortar as quickly as produced.

Soap, as generally received from the maker, is in proper condition for thus working; but if it has been in stock any time it becomes too hard, and must have from one to three ounces of distilled water sprinkled in the shaving for every pound of soap

employed, and must lie for at least twenty-four hours to be absorbed before the perfume is added.

When it is determined what size the cakes of soap are to be, what they are to sell for, and what it is intended they should cost, then the maker can measure out his perfume.

In a general way, soaps scented in this way retail from 4s. to 10s. per pound, bearing about 100 per cent. profit, which is not too much considering their limited sale. The soap being in a proper condition with regard to moisture, &c., is now to have the perfume well stirred into it. The pestle is then set to work for the process of incorporation. After a couple of hours of "warm exercise" the soap is generally expected to be free from streaks, and to be of one uniform consistence.

For perfuming soap in large portions by the cold process, instead of using the pestle and mortar as an incorporator, it is more convenient and economical to employ a mill similar in construction to a cake chocolate-mill, or a flake cocoa-mill; any mechanical apparatus that answers for mixing paste and crushing lumps will serve pretty well for blending soap together.

Before being put into the mill, the soap is to be reduced to shavings, and have the scent and colour stirred in; after leaving it, the flakes or ribands of soap are to be finally bound together by the pestle and mortar into one solid mass; it is then weighed out in quantities for the tablets required, and moulded

by the hand into egg-shaped masses; each piece being left in this condition, separately laid in rows on a sheet of white paper, dries sufficiently in a day or so to be fit for the press, which is the same as that previously mentioned. It is usual, before placing the cakes of soap in the press, to dust them over with a little starch-powder, or else to very slightly oil the mould; either of these plans prevents the soap from adhering to the letters or embossed work of the mould—a condition essential for turning out a clean well-struck tablet.

The body of all the fine soaps mentioned below should consist of the finest and whitest curd soap, or of a soap previously melted and coloured to the required shade, thus:—

ROSE-COLOURED SOAP is curd soap stained with vermilion ground in water, thoroughly incorporated when the soap is melted, and not very hot.

GREEN SOAP is a mixture of palm-oil soap and curd soap, to which is added powdered smalt ground with water.

BLUE SOAP, curd soap coloured with smalt.

BROWN SOAP, curd soap with caramel, *i. e.*, burnt sugar.

The intensity of colour varies, of course, with the quantity of colouring.

Some kinds of soap become coloured or tinted to a sufficient extent by the mere addition of the ottos used for scenting, such as “spermaceti soap,” “lemon soap,” &c., which becomes of a beautiful pale lemon

colour by the mere mixing of the perfume with the curd soap.

Otto of Rose Soap.

(To retail at 10s. per pound.)

Curd soap (previously coloured with ver- milion)	-	-	-	-	4½ lbs.
Otto of rose	-	-	-	-	1 oz.
Spirituos extract of musk	-	-	-	-	2 „
Otto of santal	-	-	-	-	¼ „
„ geranium	-	-	-	-	¼ „

Mix the perfumes, stir them in the soap shavings, and beat together.

Tonquin Musk Soap.

Pale brown-coloured curd soap	-	-	-	-	5 lbs.
Grain musk	-	-	-	-	¼ oz.
Otto of bergamot	-	-	-	-	1 oz.

Rub the musk with the bergamot, then add it to the soap, and beat up.

Orange-Flower Soap.

Curd soap	-	-	-	-	7 lbs.
Otto of neroli	-	-	-	-	3½ oz.

Santal-Wood Soap.

Curd soap	-	-	-	-	7 lbs.
Otto of santal	-	-	-	-	7 oz.
„ bergamot	-	-	-	-	2 „

Spermaceti Soap.

Curd soap	-	-	-	-	14 lbs.
Otto of bergamot	-	-	-	-	2½ lbs.
„ lemon	-	-	-	-	½ lb.

Citron Soap.

Curd soap	-	-	-	-	6 lbs.
Otto of citron zeste	-	-	-	-	$\frac{3}{4}$ lb.
„ verbena (lemon grass)	-	-	-	-	$\frac{1}{2}$ oz.
„ bergamot	-	-	-	-	4 „
„ lemon	-	-	-	-	2 „

One of the best of fancy soaps that is made.

Frangipanni Soap.

Curd soap (previously coloured pink)	-	-	-	-	7 lbs.
Civet	-	-	-	-	$\frac{1}{4}$ oz.
Otto of neroli	-	-	-	-	$\frac{1}{2}$ oz.
„ santal	-	-	-	-	$1\frac{1}{2}$ oz.
„ rose	-	-	-	-	$\frac{1}{4}$ oz.
„ vitivert	-	-	-	-	$\frac{1}{2}$ oz.

Rub the civet with the various ottos, mix, and beat in the usual manner.

Patchouli Soap.

Curd soap	-	-	-	-	$4\frac{1}{2}$ lbs.
Otto of patchouli	-	-	-	-	1 oz.
„ santal	}	-	-	of each	$\frac{1}{4}$ „
„ vitivert		-	-		

Saponaceous Cream of Almonds.

The preparation sold under this title is a potash soft soap of lard. It has a beautiful pearly appearance, and has met with extensive demand as a shaving soap. Being also used in the manufacture of EMULSINES, it is an article of no inconsiderable consumption by the perfumer. It is made thus: —

Clarified lard	-	-	-	-	7 lbs.
Potash ley (containing 26 per cent. of caustic potash)	-	-	-	}	3 $\frac{3}{4}$ „
Rectified spirit	-	-	-		
Otto of almonds	-	-	-	-	2 drachms.

Manipulation. — Melt the lard in a porcelain vessel by a salt-water bath, or by a steam heat under 15 lbs. pressure; then run in the ley *very slowly*, agitating the whole time; when about half the ley is in, the mixture begins to curdle; it will, however, become so firm that it cannot be stirred. The crême is then finished, but is not pearly; it will, however, assume that appearance by long trituration in a mortar, gradually adding the alcohol, in which has been dissolved the perfume.

Soap Powders.

These preparations are sold sometimes as a dentifrice and at others for shaving; they are made by reducing the soap into shavings by a plane, then thoroughly drying them in a warm situation, afterwards grinding in a mill, then perfuming with any otto desired.

Rypophagon Soap.

Best yellow soap	}	equal parts melted together.
Fig soft soap		

Perfume with anise and citronella.

Ambrosial Cream.

Colour the grease very strongly with alkanet root, then proceed as for the manufacture of saponaceous

cream. The cream coloured in this way has a blue tint: when it is required of a purple colour, we have merely to stain the white saponaceous cream with a mixture of vermilion and smalt to the shade desired. Perfume with otto of oringeat.

Naples Shaving Soap.

This article is very much used, and as a consequence is in demand: it can be perfumed either with otto of thyme, lavender, peppermint, or rose; being very rank, it requires a great deal of perfume to cover its fishy odour.

Chemical Examination of Naples Soap.

A. Faiszt has submitted this celebrated shaving soap to analysis. He states that it is made by saponifying mutton fat with lime, and then separating the fatty acids from the soap thus formed, by means of a mineral acid. These fatty acids are afterwards combined with ordinary caustic potash to produce the Naples soap. He found that 100 parts of this contained

	Parts.
Fatty acids - - -	57·14
Potash combined with the fatty acids -	10·39
Sulphate of potash, chloride of potassium, with a trace of carbonate of potash -	4·22
Silica, &c. - - -	0·46
Water - - -	27·68
	99·89

Gewerbeblatt aus Württemberg.

Transparent Soft Soap.

Solution caustic potash (<i>Lond. Pharmacopœia</i>)	6 lbs.
Olive oil	1 lb.

Perfume to taste.

Before commencing to make the soap, reduce the potash ley to one-half its bulk by continued boiling. Now proceed as for the manufacture of saponaceous cream. After standing a few days, pour off the waste liquor.

Transparent Hard Soap.

Reduce the soap to shavings, and dry them as much as possible, then dissolve in alcohol, using as little spirit as will effect the solution, then colour and perfume as desired, and cast the product in appropriate moulds; finally dry in a warm situation.

Until the Legislature allows spirit to be used, for manufacturing purposes, free of duty, we cannot compete with our neighbours in this article: the methylated spirit has such an abominable odour that it cannot be used for making scented soaps for the toilet.

Juniper Tar Soap.

This soap is made from the tar of the wood of the *Juniperus communis*, by dissolving it in a fixed vegetable oil, such as almond or olive oil, or in fine tallow, and forming a soap by means of a weak soda ley after the customary manner. This yields a moderately firm and clear soap, which may be readily used by application to parts affected with eruptions, at night,

mixed with a little water, and carefully washed off the following morning. This soap has lately been much used for eruptive disorders, particularly on the Continent, and with varying degrees of success. It is thought that the efficient element in its composition, is a rather less impure hydrocarburet than that known in Paris under the name *huile de cade*. On account of its ready miscibility with water, it possesses great advantage over the common tar ointment.

MEDICATED SOAPS.

In 1850, I began making a series of medicated soaps, such as SULPHUR SOAP, IODINE SOAP, BROMINE SOAP, CREOSOTE SOAP, MERCURIAL SOAP, CROTON OIL SOAP, and many others. These soaps are prepared by adding the medicant to curd soap, and then making in a tablet form for use. For sulphur soap, the curd soap may be melted, and flowers of sulphur added while the soap is in a soft condition. For antimony soap and mercurial soap, the low oxides of the metals employed may also be mixed in the curd soap in a melted state. Iodine, bromine, creosote soap, and others containing very volatile substances, are best prepared cold by shaving up the curd soap in a mortar, and mixing the medicant with it by long beating.

In certain cutaneous diseases the author has reason to believe that they will prove of infinite service as auxiliaries to the general treatment. It is obvious that the absorbent vessels of the skin are very active

during the lavatory process; such soap must not, therefore, be used except by the special advice of a medical man. Probably these soaps will be found useful for internal application. The precedent of the use of Castile soap (containing oxide of iron) renders it likely that such soaps will find a place in the pharmacopœias. The discovery of the solubility, under certain conditions, of the active alkaloids, quinine, morphia, &c., in oil, by Mr. W. Bastick, greatly favours the supposition of analogous compounds in soap.

Some forty or fifty years ago, there were several kinds of soap imported, but which now-a-days are quite unknown, such as Joppa soap, Smyrna soap, Jerusalem soap, Genoa soap, Alicant soap, &c., nearly all of which, however, were made of oil as a base.

SECTION X.

EMULSINES.

FROM soaps proper we now pass to those compounds used as substitutes for soap, which are classed together under one general title as above, for the reason that all cosmetics herein embraced have the property of forming emulsions (milks) with water.

Chemically considered, they are an exceedingly interesting class of compounds, and are well worthy of study. Being prone to decomposition, as might be expected from their composition, they should be made only in small portions, or, at least, only in quantities to meet a ready sale.

While in stock they should be kept as cool as possible, and free from a damp atmosphere.

Amandine.

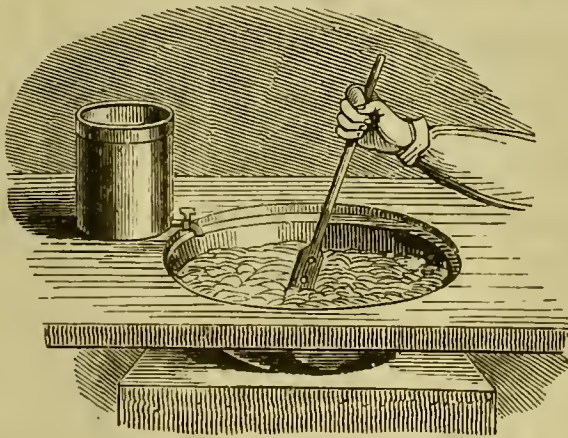
Fine almond oil	-	-	-	-	7 lbs.
Simple syrup*	-	-	-	-	4 oz.
White soft soap, or saponaceous cream, <i>i. e.</i>	}				1 "
Crème d'Amande					
Otto of almonds	-	-	-	-	1 "
„ bergamot	-	-	-	-	1 "
„ cloves	-	-	-	-	$\frac{1}{2}$ "

Rub the syrup with the soft soap until the mixture

* Simple syrup consists of 3 lbs. of loaf sugar, boiled for a minute in one pint, imperial, of distilled water.

is homogeneous, then rub in the oil by degrees; the perfume having been previously mixed with the oil.

In the manufacture of amandine (and olivine) the difficulty is to get in the quantity of oil indicated, without which it does not assume that transparent jelly appearance which good amandine should have. To attain this end, the oil is put into "a runner," that is, a tin or glass vessel, at the bottom of which is a small faucet and spigot, or tap. The oil being put into this vessel is allowed to run slowly into the



Oil-Runner in Emulsine Process.

mortar in which the amandine is being made, just as fast as the maker finds that he can incorporate it with the paste of soap and syrup; and so long as this takes place, the result will always have a jelly texture to the hand. If, however, the oil be put into the mortar quicker than the workman can blend it with the paste, then the paste becomes "oiled," and may be considered as "done for," unless, indeed, the whole process be gone through again, starting off with fresh syrup and soap, using up the greasy mass as if it were pure oil. This liability to "go off"

increases as the amandine nears the finish; hence extra caution and plenty of "elbow grease" must be used during the addition of the last two pounds of oil. If the oil be not perfectly fresh, or if the temperature of the atmosphere be above the average of summer heat, it will be almost impossible to get the whole of the oil given in the formula into combination; when the mass becomes bright and of a crystalline lustre, it will be well to stop the further addition of oil to it.

This and similar compounds should be potted as quickly as made, and the lids of the pots banded either with strips of tin-foil or paper, to exclude air. When the amandine is filled into the jars, the top or face of it is marked or ornamented with a tool made to the size of half the diameter of the interior of the jar, in a similar way to a saw; a piece of lead or tortoise-shell, being serrated with an angular file, or piece of an old saw, will do very well; place the marker on the amandine, and turn the jar gently round.

Olivine.

Gum acacia, in powder	-	-	-	2 oz.
Honey	-	-	-	6 „
Yolk of eggs	-	-	in number	5.
White soft soap	-	-	-	3 oz.
Olive oil	-	-	-	2 lbs.
Green oil	-	-	-	1 oz.
Otto of bergamot	-	-	-	1 „
„ lemon	-	-	-	1 „
„ clove	-	-	-	$\frac{1}{2}$ „
„ thyme and cassia	-	-	each	$\frac{1}{2}$ drachm.

Rub the gum and honey together until incorporated, then add the soap and egg. Having mixed the green oil and perfumes with the olive oil, the mixture is to be placed in the runner, and the process followed exactly as indicated for amandine.

Honey and Almond Paste.

Bitter almonds, blanched and ground	-	$\frac{1}{2}$ lb.
Honey	-	1 „
Yolk of eggs	-	in number - 8.
Almond oil	-	1 lb.
Otto of bergamot	-	$\frac{1}{4}$ oz.
„ cloves	-	$\frac{1}{4}$ „

Rub the eggs and honey together first, then gradually add the oil, and finally the ground almonds and the perfume.

Almond Paste.

Bitter almonds, blanched and ground	-	$1\frac{1}{2}$ lb.
Rose-water	-	$1\frac{1}{2}$ pint.
Alcohol (60 over proof)	-	16 oz.
Otto of bergamot	-	3 „

Place the ground almonds and one pint of the rose-water into a stewpan: with a slow and steady heat, cook the almonds until their granular texture assumes a pasty form, constantly stirring the mixture during the whole time, otherwise the almonds quickly burn to the bottom of pan, and impart to the whole an empyreumatic odour.

The large quantity of otto of almond which is volatilised during the process, renders it essential

that the operator should avoid the vapour as much as possible.

When the almonds are nearly cooked, the remaining water is to be added; finally, the paste is put into a mortar, and well rubbed with the pestle; then the perfume and spirit are added. Before potting this paste, as well as honey paste, it should be passed through a medium fine sieve, to insure uniformity of texture, especially as almonds do not grind kindly.

Other pastes, such as *Pâte de Pistache*, *Pâte de Cocos*, *Pâte de Guimauve*, are prepared in so similar a manner to the above, that it is unnecessary to say more about them here, than that they must not be confounded with preparations bearing a similar name made by confectioners.

Almond Meal.

Ground almonds	-	-	..	-	1 lb.
Wheat flour	-	-	-	-	1 „
Orris-root powder	-	-	-	-	$\frac{1}{4}$ „
Otto of lemon	-	-	-	-	$\frac{1}{2}$ oz.
„ almonds	-	-	-	-	$\frac{1}{4}$ drachm.

Pistachio Nut Meal, or any other Nut.

Pistachio nuts (decorticated as almonds are bleached)					} 1 lb.
Orris powder	-	-	-	-	1 „
Otto of neroli	-	-	-	-	1 drachm.
„ lemons	-	-	-	-	$\frac{1}{2}$ oz.

Other meals, such as perfumed oatmeal, perfumed bran, &c., are occasionally in demand, and are prepared as the foregoing.

All the preceding preparations are used at the wash-hand-stand as substitutes for soap, and to “render the skin pliant, soft, and fair!”

Emulsin au Jasmin.

Saponaceous cream	-	-	-	1 oz.
Simple syrup	-	-	-	1½ oz.
Almond oil	-	-	-	1 lb.
Best jasmine oil	-	-	-	½ „

Emulsin à la Violette.

Saponaceous cream	-	-	-	1 oz.
Syrup of violets	-	-	-	1½ oz.
Best violet oil	-	-	-	1½ lb.

Emulsin of other odours can be prepared with tuberose, rose, or cassie (acacia) oils (prepared by enfleurage or maceration).

For the methods of mixing the ingredients, see “Amandine,” p. 258.

On account of the high price of the French oils, these preparations are expensive, but they are undoubtedly the most exquisite of cosmetics.

Glycerine Jelly.

White soft soap	-	-	-	4 oz.
Pure glycerine	-	-	-	6 „
Almond oil	-	-	-	3 lbs. in summer.
				4 „ in winter.
Otto of thyme	-	-	-	2 drachms.

Mix the soap and glycerine in a mortar, then gradually add the oil in the same way as for amandine.

SECTION XI.

MILKS, OR EMULSIONS.

IN the perfumery trade, few articles meet with a more ready sale than that class of cosmetics denominated milks. It has long been known that nearly all the seeds of plants which are called nuts, when decorticated and freed from their pellicle, on being reduced to a pulpy mass, and rubbed with about four times their weight of water, produce a fluid which has every analogy to cow's milk. The milky appearance of these emulsions is due to the minute mechanical division of the oil derived from the nuts being diffused through the water. All these emulsions possess great chemical interest on account of their rapid decomposition, and the products emanating from their fermentation, especially that made with sweet almonds and pistachios (*Pistachia vera*).

In the manufacture of various milks for sale, careful manipulation is of the utmost importance, otherwise these emulsions "will not keep;" hence more loss than profit.

"Transformation takes place in the elements of vegetable caseine (existing in seeds) from *the very moment* that sweet almonds are converted into almond-milk." — LIEBIG. This accounts for the difficulty many persons find in making milk of

almonds that does not spontaneously divide, a day or so after its manufacture.

Milk of Roses.

Valentia almonds (blanched)	-	-	$\frac{1}{2}$ lb.
Rose-water	-	-	1 quart.
Alcohol (60 over proof)	-	-	$\frac{1}{4}$ pint.
Otto of rose	-	-	1 drachm.
White wax, spermaceti, oil soap	-	each	$\frac{1}{2}$ oz.

Manipulation.— Shave up the soap, and place it in a vessel that can be heated by steam or water bath; add to it two or three ounces of rose-water. When the soap is perfectly melted, add the wax and spermaceti, without dividing them more than is necessary to obtain the correct weight; this insures their melting slowly, and allows time for their partial saponification by the fluid soap; occasional stirring is necessary. While this is going on, blanch the almonds, carefully excluding every particle that is in the least way damaged. Now proceed to beat up the almonds in a scrupulously clean mortar, allowing the rose-water to trickle into the mass by degrees; the runner, as used for the oil in the manufacture of olivine (see page 259.), is very convenient for this purpose. When the emulsion of almonds is thus finished, it is to be strained, *without pressure*, through clean *washed* muslin (*new* muslin often contains starch, flour, gum, or dextrine).

The previously-formed saponaceous mixture is now to be placed in the mortar, and the ready formed emulsion in the runner; the soapy compound and the

emulsion are then carefully blended together. As the last of the emulsion runs into the mortar, the spirit, in which the otto of roses has been dissolved, is to take its place, and to be *gradually* trickled into the other ingredients. A too sudden addition of the spirit frequently coagulates the milk and causes it to be curdled; as it is, the temperature of the mixture rises, and every means must be taken to keep it down; the constant agitation and cold mortar effecting that object pretty well. Finally, the now formed milk of roses is to be strained.

The almond residue may be washed with a few ounces of fresh rose-water, in order to prevent any loss in bulk to the whole given quantity. The newly formed milk should be placed into a bottle having a tap in it about a quarter of an inch from the bottom. After standing perfectly quiet for twenty-four hours it is fit to bottle. All the above precautions being taken, the milk of roses will keep any time without precipitate or creamy supernatation. These directions apply to all the other forms of milk now given.

Milk of Almonds.

Bitter almonds (blanched)	-	-	10 oz.
Distilled (or rose) water	-	-	1 quart.
Alcohol (60 over proof)	-	-	$\frac{3}{4}$ pint.*
Otto of almonds	-	-	$\frac{1}{4}$ drachm.
„ bergamot	-	-	2 drachms.
Wax, spermaceti, almond oil, curd soap	}	-	each - $\frac{1}{2}$ oz.

* The imperial measure only is recognised among perfumers.

Milk of Elder.

Sweet almonds	-	-	-	-	4 oz.
Elder-flower water	-	-	-	-	1 pint.
Alcohol (60 over proof)	-	-	-	-	8 oz.
Oil of elder flowers, prepared by maceration	-	-	-	-	$\frac{1}{2}$ „
Wax, sperm, soap	-	-	-	each	$\frac{1}{2}$ „

Milk of Dandelion.

Sweet almonds	-	-	-	-	4 oz.
Rose-water	-	-	-	-	1 pint.
Expressed juice of dandelion root	-	-	-	-	1 oz.
Esprit de tubereuse	-	-	-	-	8 „
Green oil, wax, curd soap	-	-	-	each	$\frac{1}{2}$ „

Let the juice of the dandelion be perfectly fresh pressed; as it is in itself an emulsion, it may be put into the mortar after the almonds are broken up, and stirred with the water and spirit in the usual manner.

Milk of Cucumber.

Sweet almonds	-	-	-	-	4 oz.
Expressed juice of cucumbers	-	-	-	-	1 pint.
Spirit (60 over proof)	-	-	-	-	8 oz.
Essence of cucumbers	-	-	-	-	$\frac{1}{4}$ pint.
Green oil, wax, curd soap	-	-	-	each	$\frac{1}{4}$ oz.

Raise the juice of the cucumbers to the boiling point for half a minute, cool it as quickly as possible, then strain through fine muslin; proceed to manipulate in the usual manner.

Essence of Cucumbers.

Break up in a mortar 28 lbs. of good fresh cucumbers; with the pulp produced mix 2 pints recti-

fied spirit (sp. gr. .837), and allow the mixture to stand for a day and night; then distil the whole, and draw off a pint and a half. The distillation may be continued so as to obtain another pint fit for ulterior purposes.

Milk of Pistachio Nuts.

Pistachio nuts	-	-	-	-	3 oz.
Orange-flower water	-	-	-	-	3 $\frac{1}{4}$ pints.
Esprit-neroli	-	-	-	-	$\frac{3}{4}$ pint.
Palm soap, green oil,	}	-	-	-	each - 1 oz.
wax, spermaceti					

Lait Virginal.

Rose-water	-	-	-	-	1 quart.
Tincture Tolu	-	-	-	-	$\frac{1}{2}$ oz.

Add the water very slowly to the tincture; by so doing an opalescent milky fluid is produced, which will retain its consistency for many years; by reversing this operation, pouring the tincture into the water, a cloudy precipitate of the resinous matter ensues, which does not again become readily suspended in the water.

Extract of Elder Flowers.

Elder-flower water	-	-	-	-	1 quart.
Tincture benzoin	-	-	-	-	1 oz.

Manipulate as for virgin's milk.

Similar compounds may, of course, be made with orange flower and other waters.

Glycerine Lotion.

Orange-flower water	-	-	-	1 gallon.
Glycerine	-	-	-	8 oz.
Borax	-	-	-	1 „

Mr. Startin states that this is an excellent cosmetic.

SECTION XII.

COLD CREAM.

GALEN, the celebrated physician of Pergamus, in Asia, but who distinguished himself at Athens, Alexandria, and Rome, about 1700 years ago, was the inventor of that peculiar unguent, a mixture of grease and water, which is now distinguished as cold cream in perfumery, and as *Ceratum Galeni* in pharmacy.

The modern formula for cold cream is, however, quite a different thing to that given in the works of Galen, in point of odour and quality, although substantially the same—grease and water. In perfumery there are several kinds of cold cream, distinguished by their odour, such as that of camphor, almond, violet, roses, &c. Cold cream, as made by English perfumers, bears a high reputation, not only at home, but throughout Europe; the quantity exported, and which can only be reckoned by jars in hundreds of dozens, and the repeated announcements that may be seen in the shops on the Continent, in Germany, France, and Italy, of “Cold Crème Anglaise,” is good proof of the estimation in which it is held.

Rose Cold Cream.

Almond oil	-	-	-	-	-	1 lb.
Rose-water	-	-	-	-	-	1 „
White wax	}	.	-	-	-	each - 1 oz.
Spermaceti						
Otto of roses	-	-	-	-	-	$\frac{1}{2}$ drachm.

Manipulation.—Into a well-glazed thick porcelain vessel, which should be deep in preference to shallow, and capable of holding twice the quantity of cream that is to be made, place the wax and sperm; now put the jar into a boiling bath of water; when these materials are melted, add the oil, and again subject the whole to heat until the flocks of wax and sperm are liquefied; now remove the jar and contents, and set it under a runner containing the rose-water: the runner may be a tin can, with a small tap at the bottom, the same as used for the manufacture of milk of roses. A stirrer must be provided, made of lancewood, flat, and perforated with holes the size of a sixpence, resembling in form a large palette-knife. As soon as the rose-water is set running, the cream must be kept agitated until the whole of the water has passed into it; now and then the flow of water must be stopped, and the cream which sets at the sides of the jar scraped down, and incorporated with that which remains fluid. In winter time, it is necessary to slightly warm the rose-water, otherwise the cream sets before it is beaten enough. When the whole of the water has been incorporated, the cream will be cool enough to pour into the jars for sale; at

that time the otto of rose is to be added. The reason for the perfume being put in at the last moment is obvious—the heat and subsequent agitation would cause unnecessary loss by evaporation. Cold cream made in this way sets quite firmly in the jars into which it is poured, and retains “a face” resembling pure wax, although one half is water retained in the interstices of the cream. When the pots are well glazed, it will keep good for one or two years. If desired for exportation to the East or West Indies, it should always be sent out in stoppered bottles.

Cold Cream of Almonds

is prepared precisely as the above; but in place of otto of roses otto of almonds is used.

Violet Cold Cream.

Huile violette	-	-	-	-	1 lb.
Rose-water	-	-	-	-	1 „
Wax and spermaceti	-	-	-	each	1 oz.
Otto of almonds	-	-	-	-	5 drops.

Violet Cold Cream. Imitation.

Almond oil	-	-	-	-	$\frac{3}{4}$ lb.
Huile cassie	-	-	-	-	$\frac{1}{4}$ „
Rose-water	-	-	-	-	1 „
Sperm and wax	-	-	-	-	1 oz.
Otto of almonds	-	-	-	-	$\frac{1}{4}$ drachm.

This is an elegant and economical preparation, generally admired.

Tubereuse, Jasmine, and Fleur d'Orange Cold Creams

are prepared in similar manner to violet (first form); they are all very exquisite preparations, but as they *cost* more than rose cold cream, perfumers are not much inclined to introduce them in lieu of the latter.

Camphor Cold Cream.

(*Otherwise Camphor Ice.*)

Almond oil	-	-	-	-	1 lb.
Rose-water	-	-	-	-	1 „
Wax and spermaceti	-	-	-	-	1 oz.
Camphor	-	-	-	-	2 „
Otto of rosemary	-	-	-	-	1 drachm.

Melt the camphor, wax, and sperm, in the oil, then manipulate as for cold cream of roses.

Cucumber Cold Cream.

Almond oil	-	-	-	-	1 lb.
Green oil	-	-	-	-	1 oz.
Juice of cucumbers	-	-	-	-	1 lb.
Wax and sperm	-	-	-	each	1 oz.
Otto of neroli	-	-	-	-	$\frac{1}{4}$ drachm.

The cucumber juice is readily obtained by subjecting the fruit to pressure in the ordinary tincture-press. It must be raised to a temperature high enough to coagulate the small portion of albumen which it contains, and then strained through fine linen, as the heat is detrimental to the odour, on account of the great volatility of the otto of cucumber. The following method may be adopted

with advantage: — Slice the fruit very fine with a cucumber-cutter, and place them in the oil; after remaining together for twenty-four hours, repeat the operation, using fresh fruit in the strained oil; no warmth is necessary, or, at most, not more than a summer heat; then proceed to make the cold cream in the usual manner, using the almond oil thus odorised, the rose-water, and other ingredients in the regular way, perfuming, if necessary, with a little neroli.

Another and commoner preparation of cucumber is found among the Parisians, which is lard simply scented with the juice from the fruit, thus: — The lard is liquefied by heat in a vessel subject to a water bath; the cucumber juice is then stirred well into it; the vessel containing the ingredients is now placed in a quiet situation to cool. The lard will rise to the surface, and when cold must be removed from the fluid juice; the same manipulation being repeated as often as required, according to the strength of odour of the fruit desired in the grease.

Pivers' Pomade of Cucumber.

Benzoinated lard	-	-	-	-	6 lbs.
Spermaceti	-	-	-	-	2 lbs.
Essence of cucumbers	-	-	-	-	1 lb.

Melt the spermaceti with the lard, then keep it constantly in motion while it cools; now beat the grease in a mortar, gradually adding the essence of cu-

cumbers; continue to beat the whole until the spirit is evaporated, and the pomade is beautifully white.

Melons and other similar fruit will scent grease treated in the same way.

Pomade Divine.

Among the thousand and one quack nostrums, pomade divine, like James's powder, has obtained a reputation far above the most sanguine expectations of its concoctors. This article strictly belongs to the druggist, being sold as a remedial agent; nevertheless, what is sold is almost always vended by the perfumer. It is prepared thus:—

Spermaceti	-	-	-	-	$\frac{1}{4}$ lb.
Lard	-	-	-	-	$\frac{1}{2}$ "
Almond oil	-	-	-	-	$\frac{3}{4}$ "
Gum benzoin	-	-	-	-	$\frac{1}{4}$ "
Vanilla beans	-	-	-	-	$1\frac{1}{2}$ oz.

Digest the whole in a vessel heated by a water-bath at a temperature not exceeding 90° C. After five or six hours it is fit to strain, and may be poured into the bottles for sale. (Must be *stamped*, if its medicinal qualities are stated.)

Almond Balls.

Purified suet	-	-	-	-	1 lb.
White wax	-	-	-	-	$\frac{1}{2}$ "
Otto of almonds	-	-	-	-	1 drachm.
„ cloves	-	-	-	-	$\frac{1}{4}$ "

Camphor Balls.

Purified suet	-	-	-	-	1 lb.
White wax	-	-	-	-	$\frac{1}{2}$ „
Camphor	-	-	-	-	$\frac{1}{4}$ „
Otto of French lavender or rosemary				-	$\frac{1}{2}$ oz.

Both the above articles are sold, either white or coloured with alkanet root. When thoroughly melted, the material is cast in a mould; ounce gallipots with smooth bottoms answer very well for casting in. Some vendors use only large pill-boxes.

Camphor Paste.

Almond oil	-	-	-	-	$\frac{1}{2}$ lb.
Purified lard	-	-	-	-	$\frac{1}{4}$ „
Wax, spermaceti, and camphor				- each	1 oz.

Beat up the ingredients as they cool before pouring out.

Glycerine Balsam.

White wax and spermaceti	-	-	-	- each	1 oz.
Almond oil	-	-	-	-	$\frac{1}{2}$ lb.
Glycerine	-	-	-	-	2 oz.
Otto of roses	-	-	-	-	$\frac{1}{4}$ drachm.

We cannot here discuss the remedial action of any of the above preparations; in giving the formulæ, it is enough for us that they are in demand by the public.

Fine Rose Lip-salve.

Almond oil	-	-	-	-	$\frac{1}{2}$ lb.
Spermaceti and wax				- each	2 oz.
Alkanet root	-	-	-	-	2 „
Otto of roses	-	-	-	-	$\frac{1}{4}$ „

Place the wax, sperm, oil, and alkanet root into a vessel heated by steam or water bath; after the materials are melted, they must digest on the alkanet, to extract its colour, for at least four or five hours; finally, strain through fine muslin, then add the perfume just before it cools.

White Lip-salve.

Almond oil	-	-	..	-	$\frac{1}{4}$ lb.
Wax and spermaceti	-	-	-	each	1 oz.
Otto of almonds	-	-	-	-	$\frac{1}{2}$ drachm.
„ geranium	-	-	-	-	$\frac{1}{4}$ „

After lip-salve is poured into the pots and become cold, a red-hot iron must be held over it for a minute or so, in order that the heat radiated from the iron may melt the surface of the salve and give it an even face.

Cherry Lip-salve.

This is made in the same way as the fine Rose Lip-salve, with this difference, that the scent consists of one drachm each of otto of bay and otto of almonds.

Common Lip-salve

is made simply of equal parts of lard and suet, coloured with alkanet root, and perfumed with an ounce of bergamot to every pound of salve.

SECTION XIII.

POMADES AND OILS.

ACCORDING to ancient writers, unguent, pomatum, ointment, are synonymous titles for medicated and perfumed greases. Among biblical interpreters, the significant word is mostly rendered "ointment;" thus we have, in Prov. xxvii. 9., "Ointment and perfume rejoice the heart;" in Eccles. ix. 8., "Let thy head lack no ointment." "The sons of the priests made the ointments of the spices" (1 Chron. ix. 30.); "Hezekiah was glad, and showed them his treasures, his spices, and the precious ointment." (Isa. xxxix. 2.)

The name of pomatum is derived from *pomum*, an apple, because it was originally made by macerating over-ripe apples in grease.

If an apple be stuck all over with spice, such as cloves, then exposed to the air for a few days, and afterwards macerated in purified melted lard, or any other fatty matter, the grease will become perfumed. Repeating the operation with the same grease several times produces real "pomatum."

According to a recipe published more than a cen-

tury ago, the form given is: — “Kid’s grease, an orange sliced, pippins, a glass of rose-water, and half a glass of white wine, boiled and strained, and at last sprinkled with oil of sweet almonds.” The author, Dr. Quincy, observes, that “the apple is of no significance at all in the recipe,” and, like many authors of the present day, concludes that the reader is as well acquainted with the subject as the writer, and therefore considers that the weights or bulk of the materials in his recipe are likewise of no significance.

Perfumers, acting by experience or Dr. Quincy’s advice, pay no regard to the apples in the preparation of pomatum, but make it by perfuming lard or suet, or a mixture of wax, spermaceti, and oil, or some of them or all blended, to produce a particular result, according to the name that it bears.

The most important thing to consider in the manufacture of pomatum, &c., is to start off with a *perfectly inodorous* grease, whatever that grease may be.

Inodorous lard is obtained thus: — Take, say, 28lbs. of *perfectly fresh* lard, place it in a well-glazed vessel, that can be submitted to the heat of a boiling salt-water bath, or by steam under a slight pressure; when the lard is melted, add to it one ounce of powdered alum and two ounces of table salt; maintain the heat for some time, in fact, till a scum rises, consisting in a great measure of coagulated proteine compounds, membrane, &c., which must be skimmed

off; when the liquid grease appears of a uniform nature, it is allowed to grow cold.

The lard is now to be washed. This is done in small portions at a time, and is a work of much labour, which, however, is amply repaid by the result. About a pound of the grease is now placed on a slate slab, a little on the incline, a supply of good water being set to trickle over it; the surface of the grease is then constantly renewed by an operative working a muller over it, precisely as a colour-maker grinds paints in oil. In this way the water removes any traces of alum or salt, also the last traces of nitrogenous matter. Finally, the grease, when the whole is washed in this way, is remelted, the heat being maintained enough to drive off any adhering water. When cold it is finished.

Although purifying grease in this way is troublesome, and takes a good deal of time, yet unless done so, it is totally unfit for perfuming with flowers, because a bad grease will cost more in perfume to cover its *mal odeur* than the expense of thus deodorizing it. Moreover, if lard be used that "smells of the pig," it is next to impossible to impart to it any delicate odour; and if strongly perfumed by the addition of ottos, the unpurified grease will not keep, but quickly become rancid. Under any circumstances, therefore, grease that is not *perfectly inodorous* is a very expensive material to use in the manufacture of pomades.

In the south and flower-growing countries, where

the fine pomades are made by ENFLEURAGE, or by MACERATION, the purification of grease for the purpose of these manufactures is of sufficient importance to become a separate trade.

The purification of beef and mutton suet is in a great measure the same as that for lard: the greater solidity of suets requires a mechanical arrangement for washing them, of a more powerful nature than can be applied by hand labour. Mr. Ewen, of Garlick Hill, who is undoubtedly the best fat-purifier in London, employs a stone roller rotating upon a circular slab; motion is given to the roller by an axle which passes through the centre of the slab, or rather stone bed, upon which the suet is placed; being higher in the centre than at the sides, the stream of water flows away after it has once passed over the suet; in other respects the treatment is the same as for lard. These greases used by perfumers have a general title of "body," tantamount to the French nomenclature of *corps*; thus we have pomades of hard *corps* (suet), pomades of soft *corps* (lard). When drawing *extraits* from the enfleuraged grease, such as *extrait de violette*, *jasmin*, the pomades of hard *corps* are to be preferred; but when scented pomade is to be used in fabrication of unguents for the hair, pomades of soft *corps* are the most useful.

The following process of purifying grease prior to enfleurage has been expressly written for this work by M. Auguste Bermond, of Nice: —

“Épuration des Graisses.”

“ Choisissez les graisses toujours les plus fraîches, en ôtant toutes les fibres et petites peaux qui peuvent les corrompre.

“ Pour cinquante kilogs. de graisse. Vous la coupez par morceaux, ensuite vous la pilez dans un mortier, en pierre ou marbre. De suite qu'elle est bien écrasée, il faut la laver, et la faire dégorger dans de l'eau fraîche. Il faut répéter le lavage au moins six fois, jusqu'à ce que toute l'eau soit claire comme quand vous la mettez. Cette opération terminée, faites fondre la graisse, en y ajoutant cent grammes d'alun de glace pulvérisée, et une poignée de sel marin; faites bouillir, et écumez quelques secondes. Après, passez la graisse fondue à travers d'un linge pas trop serré, sans trop presser les crétons, soit le marc, que vous réservez pour vos pommades communes. Vous laissez reposer la graisse dans un grand récipient environ deux heures; ensuite, vous retirez votre graisse au clair sans y laisser d'eau.

“ Vous remettez après la graisse fondue à feu nu, avec trois ou quatre litres d'Eau de Rose, et cent cinquante grammes de Benjoints bien en poudre; vous faites bouillir petit à petit, en retirant sans cesse l'écume qui fait la graisse, quand après une heure environ, vous vous apercevez qu'il ne sort plus d'écume, vous retirez tout le feu, vous laissez reposer le mélange quatre ou cinq heures; ensuite vous tirez au clair dans des jarres ou coupelles en fer-

blanc, et l'opération est terminée. Laissez toujours, quelques livres de corps au fond, dans la crainte qu'il ne passe pas d'eau; cette matière vous servira à d'autres emplois. Pour épurer la graisse de bœuf, vous faites la même chose.

“ Pour éviter que votre corps avec les chaleurs ne tourne pas au gras, vous mettrez six cents kilogs. de graisse de porc, vingt-cinq kilogs. de graisse de bœuf. En été, on met moitié par moitié.”

Which may be briefly rendered: — Take one hundredweight of perfectly fresh grease, either of lard or beef suet; cut the grease into small pieces, and well pound it in a mortar; when it is well crushed, wash it with water repeatedly, so long, in fact, until the water is as clear after withdrawing the grease as before it was put in. The grease has now to be melted over a slow fire, adding thereto about three ounces of crystallized alum in powder, and a handful of sea salt (common salt); now let the grease boil, but allow it to bubble for a few seconds only; then strain the grease through fine linen, into a deep pan, and allow it to stand, to clear itself from all impurities, for about two hours. The clear grease is then again to be put into the pan, over a bright fire, adding thereto about three or four quarts of rose water, and about five ounces of powdered gum benzoin; it is allowed to boil gently, and all scum that rises is to be removed, until it ceases to be produced; finally the grease is put into deep pans, and when cold taken carefully off the sedimentary water; it is then fit for

use, and may be kept for an indefinite period, without change or turning rancid.

It will be observed that the principal feature in this process, is the use of the benzoin.

Mr. Redwood has recently directed the attention of chemists* to the fact that certain ointments, particularly zinc ointment, will not become rancid, if a little gum benzoin, or benzoic acid, is added to it when made; that such is the case, there is little doubt; for it has been remarked that the prepared fat used by the flower farmers in the process of enfleurage will remain sweet for some years, provided that it be digested for a time over gum benzoin, in the process of its purification — a practice that has been generally worked for this century, at Grasse, Cannes, and Nice. It therefore becomes only a question of experiment, to determine whether benzoin be a true antiseptic to all fatty bodies.

The method of perfuming grease by the direct process with flowers having already been described, under the respective names of the flowers that impart the odour thereto, it remains now only to describe those compounds that are made from them, together with such incidental matter connected with this branch of perfumery as has not been previously mentioned.

ACACIA POMADE, commonly called CASSIE PO-

* Pharmaceutical Journal, vol. xiv., No. 5.

MATUM, is made with a purified body-grease, by maceration with the little round yellow flower-heads of the *Acacia Farnesiana*.*

Black-currant leaves, and which the French term *casse*, have an odour very much resembling cassie (acacia), and are used extensively for adulterating the true acacia pomades and oils. The near similarity of name, their analogous odour (although the plants have no botanical connexion), together with the word *cassia*, a familiar perfume in England, has produced generally confused ideas in this country as to the true origin of the odour now under discussion. Cassie, casse, cassia, it will be understood now, are three distinct substances; and in order to render the matter more perspicuous in future, the materials will always be denominated ACACIA, if prepared from the *Acacia Farnesiana*; CASSE, when from *black currant*; and CASSIA, if derived from the bark of the *Cinnamomum Cassia*.

Benzoin Pomade and Oil.

Benzoic acid is perfectly soluble in hot grease. Half an ounce of benzoic acid being dissolved in half a pint of hot olive or almond oil, deposits on cooling beautiful acicular crystals, similar to the crystals that effloresce from vanilla beans; a portion of the acid, however, remains dissolved in the oil at the ordinary temperature, and imparts to it the peculiar aroma of

* I have placed a few of these plants in the Botanic Gardens, Regent's Park, and some seeds have been planted at Kew.

benzoin; upon this idea is based the principle of perfuming grease with gum benzoin by the direct process,—that is, by macerating powdered gum benzoin in melted suet or lard for a few hours, at a temperature of about 80° C. to 90° C. Nearly all the gum resins give up their odoriferous principle to fatty bodies, when treated in the same way; this fact becoming generally known, will probably give rise to the preparation of some new remedial ointments, such as *Unguentum myrrhæ*, *Unguentum assafœtida*, and the like.

TONQUIN POMADE and TONQUIN OIL are prepared by macerating the ground Tonquin beans in either melted fat or warm oil, from twelve to twenty-eight hours, in the proportion of

Tonquin beans	-	-	-	-	$\frac{1}{2}$ lb.
Fat or oil	-	-	-	-	4 „

strain through fine muslin; when cold, the grease will have a fine odour of the beans.

Vanilla Oil and Pomade.

Vanilla pods	-	-	-	-	$\frac{1}{4}$ lb.
Fat or oil	-	-	-	-	4 „

Macerate, at a temperature of 25° C., for three or four days; finally strain.

These pomatums and oils, together with the French pomades and huiles already described, constitute the foundation of the preparations of all the best hair greases sold by perfumers. Inferior scented pomatums and oils are prepared by perfuming lard,

suet, wax, oil, &c., with various ottos; the results however, in many instances more expensive than the foregoing, are actually inferior in their odour or bouquet; for grease, however slightly perfumed by maceration or enfleurage with flowers, is far more agreeable to the olfactory nerve than when scented by ottos.

The undermentioned greases have obtained great popularity, mainly because their perfume is lasting and flowery.

Pomade called Bears' Grease.

The most popular and "original" bears' grease is made thus:—

Huile de rose		}	of each -	$\frac{1}{2}$ lb.
„ fleur d'orange				
„ acacia	- -			
„ tubereuse and jasmin				
Almond oil	- -		-	10 lbs.
Lard	- -		-	12 „
Acacia pomade	- -		-	2 „
Otto of bergamot	- -		-	4 oz.
„ cloves	- -		-	2 „

Melt the solid greases and oils together by a water-bath, then add the ottos.

Bears' grease thus prepared is just hard enough to "set" in the pots at a summer heat. In very warm weather, or if required for exportation to the East or West Indies, it is necessary to use in part French pomatums instead of oils, or more lard and less almond oil.

Circassian Cream.

Purified lard	-	-	-	-	1 lb.
Benzoin suet	-	-	-	-	1 „
French rose pomatum	-	-	-	-	$\frac{1}{2}$ „
Almond oil, coloured with alkanet	-	-	-	-	2 lbs.
Otto of rose	-	-	-	-	$\frac{1}{4}$ oz.

Balsam of Flowers.

French rose pomatum	-	-	-	-	12 oz.
„ violet pomatum	-	-	-	-	12 „
Almond oil	-	-	-	-	2 lbs.
Otto of bergamot	-	-	-	-	$\frac{1}{4}$ oz.

Crystallised Oil. (First quality.)

Huile de rose	-	-	-	-	1 lb.
„ tubereuse	-	-	-	-	1 „
„ fleur d'orange	-	-	-	-	$\frac{1}{2}$ „
Spermaceti	-	-	-	-	$\frac{1}{2}$ lb.

(Second quality.)

Almond	-	-	-	-	2 $\frac{1}{2}$ lbs.
Spermaceti	-	-	-	-	$\frac{1}{2}$ „
Otto of lemon	-	-	-	-	3 oz.

Melt the spermaceti in a vessel heated by a water-bath, then add the oils; continue the heat until all flocks disappear; let the jars into which it is poured be warm; cool as slowly as possible, to insure good crystals; if cooled rapidly, the mass congeals without the appearance of crystals. This preparation has a very nice appearance, and so far sells well; but its continued use for anointing the hair renders the head

scurfy ; indeed, the crystals of sperm may be combed out of the hair in flakes after it has been used a week or two.

Castor Oil Pomatum.

Tubereuse pomatum	-	-	-	1 lb.
Castor oil	-	-	-	$\frac{1}{2}$ "
Almond oil	-	-	-	$\frac{1}{2}$ "
Otto of bergamot	-	-	-	1 oz.

Balsam of Neroli.

French rose pomatum	-	-	-	$\frac{1}{2}$ lb.
„ jasmine pomatum	-	-	-	$\frac{1}{2}$ "
Almond oil	-	-	-	$\frac{3}{4}$ "
Otto of neroli	-	-	-	1 drachm.

Marrow Cream.

Purified lard	-	-	-	1 lb.
Almond oil	-	-	-	1 "
Palm oil	-	-	-	1 oz.
Otto of cloves	-	-	-	$\frac{1}{2}$ drachm.
„ bergamot	-	-	-	$\frac{1}{2}$ oz.
„ lemon	-	-	-	1 $\frac{1}{2}$ oz.

Marrow Pomatum.

Purified lard	-	-	-	4 lbs.
„ suet	-	-	-	2 "
Otto of lemon	-	-	-	1 oz.
„ bergamot	-	-	-	$\frac{1}{2}$ "
„ cloves	-	-	-	3 drachms.

Melt the greases ; then beat them up with a whisk, or flat wooden spatula, for half an hour or more ; as the grease cools, minute vesicles of air are inclosed by the pomatum, which not only increase the bulk of

the mixtures, but impart a peculiar mechanical aggregation, rendering the pomatum light and spongy; in this state it is obvious that it fills out more pots than otherwise, and hence is more profitable.

Common Violet Pomatum.

Purified lard	-	-	-	-	1 lb.
<i>Washed</i> acacia pomatum	-	-	-	-	6 oz.
„ rose pomatum	-	-	-	-	4 „

Manipulate as for marrow pomatum.

In all the cheap preparations for the hair, the manufacturing perfumers use the *washed* French pomatums and the washed French oils for making their greases. Washed pomatums and washed oils are those greases that originally have been the best pomatums and huiles prepared by enfleurage and by maceration with the flowers; which pomades and huiles have been subjected to digestion in alcohol for the manufacture of essences for the handkerchief. After the spirit has been on the pomatums, &c., it is poured off; the residue is then called *washed* pomatum, and still retains an odour strong enough for the manufacture of most hair greases.

For pomatums of other odours it is only necessary to substitute rose, jasmine, tubereuse, and others, in place of the acacia pomatum in the above formulæ.

Pomades Double, Millefleurs.

Rose, jasmine, fleur d'orange, violet, tubereuse, &c. are all made, in winter with two-thirds best French

pomatum, one-third best French oils; in summer, equal parts.

Pommade à la Héliotrope.

French rose pomade	-	-	-	1 lb.
Vanilla oil	-	-	-	$\frac{1}{2}$ "
Huile de jasmin	-	-	-	4 oz.
„ tubereuse	-	-	-	2 "
„ fleur d'orange	-	-	-	2 "
Otto of almonds	-	-	-	6 drops.
„ cloves	-	-	-	3 "

Huile Antique (à la Héliotrope).

Same as the above, substituting rose oil for the pomade.

Philocome.

The name of this preparation, which is a compound of two Greek words (*φίλος* and *κόμη*), signifying “a friend to the hair,” was first introduced by the Parisian perfumers; and a very good name it is, for philocome is undoubtedly one of the best unguents for the hair that is made.

Philocome. (First quality.)

White wax	-	-	-	10 oz.
Fresh rose oil	-	-	-	1 lb.
„ acacia oil	-	-	-	$\frac{1}{2}$ "
„ jasmine oil	-	-	-	$\frac{1}{2}$ "
„ fleur d'orange oil	-	-	-	1 "
„ tubereuse oil	-	-	-	1 "

Melt the wax in the oils by a water-bath at the lowest possible temperature. Stir the mixture as it

cools; do not pour out the philcome until it is nearly cool enough to set; let the jars, bottles, or pots, into which it is filled for sale, be slightly warmed, or at least of the same temperature as the philcome, otherwise the bottles chill the material as it is poured in, and make it appear of an uneven texture.

Philcome. (Second quality.)

White wax	-	-	-	-	5 oz.
Almond oil	-	-	-	-	2 lbs.
Otto of bergamot	-	-	-	-	1 oz.
„ lemon	-	-	-	-	$\frac{1}{2}$ „
„ lavender	-	-	-	-	2 drachms.
„ cloves	-	-	-	-	1 „

Fluid Philcome.

Take 1 ounce of wax to 1 pound of oil, and scent as above.

Pommade Hongroise.

(For the Moustache.)

White wax	-	-	-	-	1 lb.
Oil soap	-	-	-	-	$\frac{1}{2}$ „
Gum arabic	-	-	-	-	$\frac{1}{2}$ „
Rose water	-	-	-	-	1 pint.
Otto bergamot	-	-	-	-	1 oz.
„ thyme	-	-	-	-	$\frac{1}{2}$ drachm.

Melt the gum and the soap in the water by a gentle heat, then add the wax, constantly stirring the ingredients together; when of a uniform consistency put in the perfume.

If required to be tinted, use burnt umber ground in oil (sold in tubes by the artists' colourmen), for

shades of brown; or for black, stain with ivory black in oil, the same as for the brown shade.

Hard or Stick Pomatums.

Benzoinated suet	-	-	-	-	1 lb.
White wax	-	-	-	-	1 „
Jasmine pomatum	-	-	-	-	$\frac{1}{2}$ „
Tubereuse pomatum	-	-	-	-	$\frac{1}{2}$ „
Otto of rose	-	-	-	-	1 drachm.

Another Form, — cheaper.

Suet	-	-	-	-	1 lb.
Wax	-	-	-	-	$\frac{1}{2}$ „
Otto of bergamot	-	-	-	-	1 oz.
„ cassia	-	-	-	-	1 drachm.
„ thyme	-	-	-	-	$\frac{1}{2}$ „

The above recipes produce WHITE BATONS. BROWN and BLACK BATONS are also in demand. They are made in the same way as the above, but coloured with lamp-black or umber ground in oil. Such colours are best purchased ready ground at an artist's colourman's.

Black and Brown Cosmetique,

Such as is sold by RIMMEL, is prepared with a nicely scented soap, strongly coloured with lamp black or with umber. The soap is melted, and the colour added while the soap is soft; when cold, it is cut up in oblong pieces.

It is used as a temporary dye for the moustache, applied with a small brush and water.

SECTION XIV.

HAIR-DYES AND DEPILATORY.

BY way of personal adornment, few practices are of more ancient origin than that of painting the face, dyeing the hair, and blackening the eyebrows and eyelashes.

It is a practice universal among the women of the higher and middle classes in Egypt, and very common among those of the lower orders, to blacken the edge of the eyelids, both above and below the eye, with a black powder, which they term *kohhl*. The *kohhl* is applied with a small probe of wood, ivory, or silver, tapering towards the end, but blunt. This is moistened sometimes with rose-water, then dipped in the powder, and drawn along the edges of the eyelids. It is thought to give a very soft expression to the eye, the size of which, in appearance, it enlarges; to which circumstances, probably, Jeremiah refers when he writes, “ Though thou rentest thy face (or thine eyes) with painting, in vain shalt thou make thyself fair.”—*Jer.* iv. 30. See also Lane’s *Modern Egyptians*, vol. i. p. 41., et seq.

A singular custom is observable both among Moorish and Arab females—that of ornamenting the face between the eyes with clusters of bluish spots

or other small devices, which, being stained, become permanent. The chin is also spotted in a similar manner, and a narrow blue line extends from the point of it, and is continued down the throat. The eyelashes, eyebrows, and also the tips and extremities of the eyelids, are coloured black. The soles, and sometimes other parts of the feet, as high as the ankles, the palms of the hands, and the nails, are dyed with a yellowish red with the leaves of a plant called henna*, or alkanna of Cyprus, and Egypt (*Lawsonia inermis*), the leaf of which somewhat resembles the myrtle, and is dried for the purposes above mentioned. The back of the hand is also often coloured and ornamented in this way with different devices. On holidays they paint their cheeks of a red brick colour, a narrow red line being also drawn down the temples.

Similar customs are still prevalent in Persia. Lady Sheil, speaking of the shah's mother, says :—
“ The palms of her hands and tips of her fingers were dyed red with a herb called henna, and the edges of the inner part of the eyelids were coloured with antimony. All the Kajars have naturally large arched eyebrows ; but, not satisfied with this, the women enlarge them by doubling their real size with great streaks of antimony : her cheeks were well rouged, as is the invariable custom among

* This plant is referred to in the Song of Solomon, under the name of “ Camphire.”

Persian women of all classes." — *Glimpses of Life in Persia.*

In Greece, "for colouring the lashes and sockets of the eye, they throw incense or gum labdanum on some coals of fire; the smoke which ascends is intercepted with a plate, in order to collect the soot. This I saw applied. A girl, sitting, crossed-legged as usual, on a sofa, closing one of her eyes, took the two lashes between the fore-finger and thumb of her left hand, pulled them forward, and then thrusting in, at the external corner, a sort of bodkin or probe which had been immersed in the soot, and withdrawing it, the particles previously adhering to the probe remained within the eyelashes." — Chandler's *Travels in Greece.*

Dr. Shaw states that, among other curiosities that were taken out of the tombs at Sahara relating to Egyptian women, he saw a joint of the common reed, which contained one of these bodkins, and an ounce or more of this powder.

In England, a similar practice is adopted by many persons whose hair is grey; but instead of using the black material in the form of a powder, it is employed as a crayon, the colour being mixed with a greasy body, such as the brown and black stick pomatums described in the previous article.

Turkish Hair-dye.

In Constantinople there are some persons, particularly Armenians, who devote themselves to the preparation of cosmetics, and obtain large sums of

money from those desirous of learning this art. Amongst these cosmetics is a black dye for the hair, which, according to M. Landerer of Athens, is prepared in the following manner: —

Finely pulverised galls are kneaded with a little oil to a paste, which is roasted in an iron pan until the oil vapours cease to evolve, upon which the residue is triturated with water into a paste, and heated again to dryness. At the same time a metallic mixture, which is brought from Egypt to the commercial marts of the East, and which is termed in Turkish *Rastikopetra*, or *Rastik-Yuzi*, is employed for this purpose. This metal, which looks like dross, is by some Armenians intentionally fused, and consists of iron and copper. It obtains its name from its use in dyeing or staining the hair, and particularly the eyebrows — for *rastik* means eyebrows, and *yuzi* stone. The fine powder of this metal is as intimately mixed as possible with the moistened gall mass into a paste, which is preserved in a damp place, by which it acquires the blackening property. In some cases this mass is mixed with the powder of odorous substances which are used in the seraglio as perfumes, and called *karsi* — that is, pleasant odour; and of these the principal ingredient is ambergris. To blacken the hair, a little of this dye is triturated in the hand or between the fingers, with which the hair or beard is well rubbed. After a few days the hair becomes very beautifully black, and it is a real pleasure to see such fine black beards as are met

with in the East among the Turks who use this black dye. Another and important advantage in the use of this dye consists herein, that the hair remains soft, pliant, and for a long time black, when it has been once dyed with this substance. That the colouring properties of this dye are to be chiefly ascribed to the pyrogallic acid, which can be found by treating the mass with water, may be with certainty assumed.

Litharge Hair-dye.

Powdered litharge	-	-	-	-	2 lbs.
Quicklime	-	-	-	-	$\frac{1}{2}$ lb.
Calcined magnesia	-	-	-	-	$\frac{1}{2}$ „

Slake the lime, using as little water as possible to make it disintegrate, then mix the whole by a sieve.

Another Way.

Slaked lime	-	-	-	-	3 lbs.
White lead, in powder	-	-	-	-	2 „
Litharge	-	-	-	-	1 lb.

Mix by sifting, bottle, and well cork.

Directions to be sold with the above. — “ Mix the powder with enough water to form a thick creamy fluid; with the aid of a small brush, completely cover the hair to be dyed with this mixture: to dye a light brown, allow it to remain on the hair four hours; dark brown, eight hours; black, twelve hours. As the dye does not act unless it is moist, it is necessary to keep it so by wearing an oiled silk, india-rubber, or other waterproof cap.”

“After the hair is dyed, the refuse must be thoroughly washed from the head with plain water; when dry, the hair must be oiled.”

Simple Silver Dye.

(*Otherwise “Vegetable Dye.”*)

Nitrate of silver	-	-	-	-	1 oz.
Rose water	-	-	-	-	1 pint.

Before using this dye, it is necessary to free the hair from grease by washing it with soda or pearl-ash and water. The hair must be quite dry prior to applying the dye, which is best laid on with an old tooth-brush. This dye does not “strike” for several hours. It needs scarcely be observed that its effects are more rapidly produced by exposing the hair to sunshine and air, and by washing the hair previously with sulphur soap.

Hair-dye, with Mordant.

Brown.

Nitrate of silver	-	-	-	1 oz., blue bottles.
Rose water	-	-	-	8 „ „

The Mordant.—Sulphuret of potassium, 1 oz., white bottles.

Water	-	-	6 oz.
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Black.

Nitrate of silver	-	-	-	1 oz., blue bottles.
Water	-	-	-	6 „ „

The Mordant.—Sulphuret of potassium, 1 „ white bottles.

Water	-	-	6 „
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The mordant is to be applied to the hair first; when dry, the silver solution.

Great care must be taken that the sulphuret is fresh made, or at least, well preserved in closed bottles, otherwise, instead of the mordant making the hair black, it will impart a *yellow* hue. When the mordant is good, it has a very disagreeable odour; and although this is the quickest and best dye, its unpleasant smell has given rise to the

Inodorous Dye.

Blue bottles. — Dissolve the nitrate of silver in the water as in the above; then add liquid ammonia by degrees until the mixture becomes cloudy from the precipitate of the oxide of silver; continue to add ammonia in small portions until the fluid again becomes bright from the oxide of silver being redissolved.

White bottles. — Pour half a pint of boiling rose-water upon three ounces of powdered gall nuts; when cold, strain and bottle. This forms the mordant, and is used in the same way as the first-named dye, like the sulphuret mordant. It is not so good a dye as the previous one.

French Brown Dye.

Blue bottles. — Saturated solution of sulphate of copper; to this add ammonia enough to precipitate the oxide of copper and redissolve it (as with the silver in the above), producing the azure liquid.

White bottles. — *Mordant.* — Saturated solution of prussiate of potass.

Artificial hair, for the manufacture of perukes, is dyed in the same manner as wool.

There are in the market several other hair-dyes, but all of them are but modifications of the above, possessing no marked advantage.

Lead Dye.

Liquid hair-dye, not to blacken the skin, may be thus prepared:— Dissolve in one ounce of liquor potassæ as much freshly precipitated oxide of lead as it will take up, and dilute the resulting clear solution with three ounces of distilled water. Care must be taken not to wet the skin unnecessarily with it.

Quick Depilatory or Rusma.

(For removing hair.)

As the ladies of this country consider the growth of hair upon the upper lip, upon the arms, and on the back of the neck, to be detrimental to beauty, those who are troubled with such physical indications of good health and vital stamina have long had recourse to rusma or depilatory for removing it.

This or analogous preparations were introduced into this country from the East, rusma having been in use in the harems of Asia for many ages.

Best lime slaked	-	-	-	-	3 lbs.
Orpiment, in powder	-	-	-	-	$\frac{1}{2}$ lb.

Mix the material by means of a drum sieve; pre-

serve the same for sale in well-corked or stoppered bottles.

Directions to be sold with the above. Mix the depilatory powder with enough water to render it of a creamy consistence ; lay it upon the hair for about five minutes, or until its caustic action upon the skin renders it necessary to be removed ; a similar process to shaving is then to be gone through, but instead of using a razor, operate with an ivory or bone paper-knife ; then wash the part with plenty of water, and apply a little cold cream.

The precise time to leave depilatory upon the part to be depilated cannot be given, because there is a physical difference in the nature of hair. "Raven tresses" require more time than "flaxen locks;" the sensitiveness of the skin has also to be considered. A small feather is a very good test for its action.

A few readers will, perhaps, be disappointed in finding that I have only given one formula for depilatory. The receipts might easily have been increased in number, but not in quality. The use of arsenical compounds is objectionable, but it undoubtedly increases the depilating action of the compounds. A few compilers of "Receipt Books," "Supplements to Pharmacopœias," and others, add to the lime "charcoal powder," "carbonate of potass," "starch," &c. ; but what action have these materials, chemically, upon hair? The simplest depilatory is moistened quicklime, but it is less energetic than the mixture recommended above ; it

answers very well for tanners and fellmongers, with whom time is no object.

Hernandia Depilatory.

Burnett says that 'the juice of the leaves of the *Hernandia Sonora* is found to be an advantageous and effectual depilatory, as it destroys the hair wherever it is employed, without pain to the skin.

Knowing from experience how much many of my countrywomen would value such an article, it is my intention at an early period to test the value of this assertion, and if it be possessed of the properties asserted, *Hernandia Depilatory* shall shortly be at their command.

SECTION XV.

ABSORBENT POWDERS.

A LADY'S toilet-table is incomplete without a box of some absorbent powder; indeed, from our earliest infancy, powder is used for drying the skin with the greatest benefit: no wonder that its use is continued in advanced years, if, by slight modifications in its composition, it can be employed not only as an absorbent, but as a means of "personal adornment." We are quite within limits in stating that many tons weight of such powders are used in this country annually. They are principally composed of various starches, prepared from wheat, potatoes, and various nuts, mixed more or less with powdered talc — of Haüy, steatite (soap-stone), French chalk, oxide of bismuth, and oxide of zinc, &c. The most popular is what is termed

Violet Powder.

Wheat starch	-	-	-	-	12 lbs.
Orris-root powder	-	-	-	-	2 „
Otto of lemon	-	„	-	-	$\frac{1}{2}$ oz.
„ bergamot	-	-	-	-	$\frac{1}{4}$ „
„ cloves	-	-	-	-	2 drachms.

Rose Face-powder.

Wheat starch	-	-	-	-	7 lbs.
Rose pink	-	-	-	-	$\frac{1}{2}$ drachm.
Otto of rose	-	-	-	-	2 drachms.
„ santal	-	-	-	-	2 „

Plain or Unscented Hair-powder

Is pure wheat starch.

Face-powder.

Starch	-	-	-	-	1 lb.
Oxide of bismuth	-	-	-	-	4 oz.

Perle powder.

French chalk	-	-	-	-	1 lb.
Oxide of bismuth	-	-	-	-	1 oz.
Oxide of zinc	-	-	-	-	1 „

Blanc de Perle

Is pure oxide of bismuth in powder.

French Blanc

Is levigated talc passed through a silk sieve.

This is a very good face-powder, particularly as it does not discolour from emanation of the skin or impure atmosphere.

As to painting the face, it appears to be practised, more or less, by both male and female, from the earliest period to the present time. Gibbon*, describing the Roman emperor Elagabalus, says, that at his first entry into the eternal city, his eyebrows were tinged with black, and his cheeks painted with an artificial red and white. A well-known duke, now living, never appears in public until “got up” with a fair quantity of rouge, and which is more particularly noticed, as his Grace invariably paints

* Gibbon's Decline and Fall of the Roman Empire, vol. i. chap. vi. p. 233

round his eyes so much that he appears just to have escaped after a pugilistic encounter. His Grace is rather eccentric, to be sure, as it has been said that he went to France in a balloon, for fear of the *malade de mer*.

Liquid Blanc (for theatrical use).

The use of a white paint by actresses and dancers is absolutely necessary; great exertion produces a florid complexion, which is incompatible with certain scenic effects, and requires a cosmetic to subdue it. The late Madame V——, during her stage career, has probably consumed more than half a hundred-weight of oxide of bismuth, prepared thus:—

Rose or orange-flower water	-	-	1 pint.
Oxide of bismuth	-	-	4 oz.

Mixed by long trituration.

Calcined Talc

Is also extensively used as a toilet powder, and is sold under various names; it is not so unctuous as the ordinary kind.

Rouge and Red Paints.

These preparations are in demand, not only for theatrical use, but by private individuals. Various shades of colour are made to suit the complexions of the blonde and brunette. One of the best kind is that termed

Bloom of Roses.

Strong liquid ammonia	-	-	-	$\frac{1}{2}$ oz.
Finest carmine	-	-	-	$\frac{1}{4}$ "
Rose water	-	-	-	1 pint.
Esprit de rose, triple	-	-	-	$\frac{1}{2}$ oz.

Place the carmine in a pint bottle, and pour on it the ammonia; allow them to remain together, with occasional agitation, for two days; then add the rose-water and esprit, and well mix. Place the bottle in a quiet situation for a week; any precipitate of impurities from the carmine will subside; the supernatant "Bloom of Roses" is then to be bottled for sale. If the carmine was perfectly pure, there would be no precipitate; nearly all the carmine purchased from the makers is more or less sophisticated, its enormous price being a premium for its adulteration.

Carmine cannot be manufactured *profitably* on a small scale for commercial purposes; four or five manufacturers supply the whole of Europe! M. Titard, Rue Grenier St. Lazare, Paris, produces, without doubt, the finest article; singularly enough, however, the principal operative in the establishment is an old Englishman.

"The preparation of the finest carmine is still a mystery, because, on the one hand, its consumption being very limited, few persons are engaged in its manufacture, and upon the other, the raw material being costly, extensive experiments on it cannot be conveniently made."—DR. URE.

“ A manufacturer of carmine, who was aware of the superiority of the French colour, went to Lyons for the purpose of improving his process, and bargained with the most celebrated manufacturer in that city for the acquisition of his secret, for which he was to pay one thousand pounds. He was shown all the process, and saw a beautiful colour produced ; but he found not the least difference in the French mode of fabrication and that which had been constantly adopted by himself. He appealed to his instructor, and insisted that he must have concealed something. The man assured him that he had not, and invited him to see the process a second time. He minutely examined the water and the materials, which were in every respect similar to his own, and then, very much surprised, said, “ I have lost my labour and my money, for the air of England does not permit us to make good carmine.” “ Stay,” said the Frenchman ; “ don’t deceive yourself. What kind of weather is it now ? ” “ A bright sunny day,” replied the Englishman. “ And such are the days,” said the Frenchman, “ on which I make my colour. Were I to attempt to manufacture it on a dark or cloudy day, my results would be the same as yours. Let me advise you, my friend, always to make carmine on bright, sunny days.” “ I will,” rejoined the Englishman ; “ but I fear I shall make very little in London ! ” — SIR H. DAVY.

In the *Encyclopédie Roret* will be found no less than a dozen recipes for preparing carmine ; the

number of formulæ will convince the most superficial reader that the true form is yet withheld.

Analysis has taught us its exact composition; but a certain dexterity of manipulation and proper temperature are indispensable to complete success.

Most of the recipes given by Dr. Ure, and others, are from this source; but as they possess no practical value we refrain from reprinting them.

Toilet Rouges

Are prepared of different shades by mixing fine carmine with talc powder, in different proportions; say one drachm of carmine to two ounces of talc, or one of carmine to three of talc, and so on. These rouges are sold in powder, and also in cake on china pots; for the latter the rouge is mixed with a minute portion of solution of gum tragacanth. M. Titard prepares a great variety of rouges. In some instances the colouring matter of the cochineal is spread upon thick paper and dried very gradually; it then assumes a beautiful green tint. This curious optical effect is also observed in "pink saucers." What is known as Chinese book-rouge is evidently made in the same way, and has been imported into this country for many years.

When the bronze-green cards are moistened with a piece of damp cotton wool, and applied to the lips or cheeks, the colour assumes a beautiful rosy hue; Common sorts of rouge, called "theatre rouge," are made from the Brazil-wood lake; another kind is

derived from the safflower (*Carthamus tinctorius*); from this plant also are made

Pink Saucers.

The safflower is washed in water until the yellow colouring matter is removed; the carthamine, or colour principle, is then dissolved out by a weak solution of carbonate of soda; the colouring is then precipitated into the saucers by the addition of sulphuric acid to the solution.

Cotton wool and crape, being coloured in the same way, are used for the same purpose, the former being sold as Spanish wool, the latter as Crépon rouge.

SECTION XVI.

TOOTH-POWDERS AND MOUTH-WASHES.

TOOTH-POWDERS, regarded as a means merely of cleansing the teeth, are most commonly placed among cosmetics; but this should not be, as they assist greatly in preserving a healthy and regular condition of the dental machinery, and so aid in perfecting as much as possible the act of mastication. In this manner, they may be considered as most useful, although, it is true, subordinate medicinal agents. By a careful and prudent use of them, some of the most frequent causes of early loss of the teeth may be prevented; these are, the deposition of tartar, the swelling of the gums, and an undue acidity of the saliva. The effect resulting from accumulation of the tartar is well known to most persons, and it has been distinctly shown that swelling of the substance of the gums will hasten the expulsion of the teeth from their sockets; and the action of the saliva, if unduly acid, is known to be at least injurious, if not destructive. Now, the daily employment of a tooth-powder sufficiently hard, so as to exert a tolerable degree of friction upon the teeth, without, at the same time, injuring the enamel of the teeth, will, in

most cases, almost always prevent the tartar accumulating in such a degree as to cause subsequent injury to the teeth; and a flaccid, spongy, relaxed condition of the gums may be prevented or overcome by adding to such a tooth-powder some tonic and astringent ingredient. A tooth-powder containing charcoal and cinchona bark will accomplish these results in most cases, and therefore dentists generally recommend such. Still, there are objections to the use of charcoal: it is too hard and resisting, its colour is objectionable, and it is perfectly insoluble by the saliva; it is apt to become lodged between the teeth, and there to collect decomposing animal and vegetable matter around such particles as may be fixed in this position. Cinchona bark, too, is often stringy, and has a bitter, disagreeable taste. M. Mialhe highly recommends the following formula:—

Mialhe's Tooth-powder.

Sugar of milk, one thousand parts; lake, ten parts; pure tannin, fifteen parts; oil of mint, oil of aniseed, and oil of orange-flowers, so much as to impart an agreeable flavour to the composition.

His directions for the preparation of this tooth-powder are, to rub well the lake with the tannin, and gradually add the sugar of milk, previously powdered and sifted; and lastly, the essential oils are to be carefully mixed with the powdered substances. Experience has convinced him of the efficacy of this

tooth-powder, the habitual employment of which will suffice to preserve the gums and teeth in a healthy state. For those who are troubled with excessive relaxation and sponginess of the gums, he recommends the following astringent preparation:—

Mialhe's Dentifrice.

Alcohol, one thousand parts; genuine kino, one hundred parts; rhatany root, one hundred parts; tincture of balsam of tolu, two parts; tincture of gum benzoin, two parts; essential oil of canella, two parts; essential oil of mint, two parts; essential oil of aniseed, one part.

The kino and the rhatany root are to be macerated in the alcohol for seven or eight days; and after filtration, the other articles are to be added. A teaspoonful of this preparation mixed in half a goblet of water, should be used to rinse the mouth, after the use of the tooth-powder.

Camphorated Chalk.

Precipitated chalk	-	-	-	-	1 lb.
Powdered orris root	-	-	-	-	$\frac{1}{2}$ "
Powdered camphor	-	-	-	-	$\frac{1}{4}$ "

Reduce the camphor to powder by rubbing it in a mortar with a little spirit, then sift the whole well together. On account of the volatility of camphor, the powder should always be sold in bottles, or at least in boxes lined with tinfoil.

Quinine Tooth-powder.

Precipitated chalk	-	-	-	-	1 lb.
Starch powder	-	-	-	-	$\frac{1}{2}$ "
Orris powder	-	-	-	-	$\frac{1}{2}$ "
Sulphate of quinine	-	-	-	-	1 drachm.

After sifting, it is ready for sale.

Prepared Charcoal.

Fresh made charcoal, in fine powder	-	-	-	-	7 lbs.
Prepared chalk	-	-	-	-	1 lb.
Orris root	-	-	-	-	1 "
Catechu	-	-	-	-	$\frac{1}{2}$ "
Cassia bark	-	-	-	-	$\frac{1}{2}$ "
Myrrh	-	-	-	-	$\frac{1}{4}$ "

Peruvian Bark Powder.

Peruvian bark, in powder	-	-	-	-	$\frac{1}{2}$ lb.
Bole ammoniac	-	-	-	-	1 "
Orris powder	-	-	-	-	1 "
Cassia bark	-	-	-	-	$\frac{1}{2}$ "
Powdered myrrh	-	-	-	-	$\frac{1}{2}$ "
Precipitated chalk	-	-	-	-	$\frac{1}{2}$ "
Otto of cloves	-	-	-	-	$\frac{1}{4}$ oz.

Homœopathic Chalk.

Precipitated chalk	-	-	-	-	1 lb.
Powdered orris	-	-	-	-	1 oz.
„ starch	-	-	-	-	1 "

Cuttle-fish Powder.

Powdered cuttle-fish	-	-	-	-	$\frac{1}{2}$ lb.
Precipitated chalk	-	-	-	-	1 "
Powdered orris	-	-	-	-	$\frac{1}{2}$ "
Otto of lemons	-	-	-	-	1 oz.
„ neroli	-	-	-	-	$\frac{1}{2}$ drachm.

Borax and Myrrh Tooth-powder.

Precipitated chalk	-	-	-	-	1 lb.
Borax powder	-	-	-	-	$\frac{1}{2}$ "
Myrrh powder	-	-	-	-	$\frac{1}{4}$ "
Orris	„	-	-	-	$\frac{1}{4}$ "

Farina Piesse's Powder.

Precipitated chalk	-	-	-	-	2 lbs.
Orris root	-	-	-	-	2 „
Rose pink	-	-	-	-	1 drachm.
Very fine powdered sugar	-	-	-	-	$\frac{1}{2}$ lb.
Otto of neroli	-	-	-	-	$\frac{1}{2}$ drachm.
„ lemons	-	-	-	-	$\frac{1}{4}$ oz.
„ bergamot	-	-	-	-	$\frac{1}{4}$ „
„ orange peel	-	-	-	-	$\frac{1}{4}$ „
„ rosemary	-	-	-	-	1 drachm.

Rose Tooth-powder.

Precipitated chalk	-	-	-	-	1 lb.
Orris	-	-	-	-	$\frac{1}{2}$ „
Rose pink	-	-	-	-	2 drachms.
Otto of rose	-	-	-	-	1 „
„ santal	-	-	-	-	$\frac{1}{4}$ „

All these powders are to be well sifted together; they are then ready for sale.

Opiate Tooth-paste.

Honey	-	-	-	-	$\frac{1}{2}$ lb.
Chalk	-	-	-	-	$\frac{1}{2}$ „
Orris	-	-	-	-	$\frac{1}{2}$ „
Rose pink	-	-	-	-	2 drachms.
Otto of cloves	}	-	of each	-	$\frac{1}{2}$ „
„ nutmeg					
„ rose					
Simple syrup	-	-	enough to form a paste.		

MOUTH-WASHES.

Violet Mouth-wash.

Tincture of orris	-	-	-	-	$\frac{1}{2}$ pint.
Esprit de rose	-	-	-	-	$\frac{1}{2}$ „
Spirit	-	-	-	-	$\frac{1}{2}$ „
Otto of almonds	-	-	-	-	5 drops.

This is a very nice preparation, and gives great satisfaction.

Eau Botot.

Tincture of cedar-wood	-	-	-	-	1 pint.
Tincture of myrrh	-	-	-	-	$\frac{1}{4}$ „
„ rhatany	-	-	-	-	$\frac{1}{4}$ „
Otto of peppermint	-	-	-	-	15 drops.
„ roses	-	-	-	-	10 „

All these tinctures should be made with grape spirit, or at least with pale unsweetened brandy.

Botanic Styptic.

Rectified spirit	-	-	-	-	1 quart.
Rhatany root	}	-	-	of each	-
Gum myrrh					
Whole cloves					
					2 oz.

Macerate for fourteen days, and strain.

Tincture of Myrrh and Borax.

Spirits of wine	-	-	-	-	1 quart.
Borax	}	-	-	of each	-
Honey					
					1 oz.
Gum myrrh	-	-	-	-	1 „
Red sanders wood	-	-	-	-	1 „

Rub the honey and borax well together in a mortar, then gradually add the spirit—which should

not be stronger than .920, *i. e.* proof spirit, — the myrrh, and sanders wood, and macerate for fourteen days.

Tincture of Myrrh with Eau de Cologne.

Eau de Cologne	-	-	-	-	1 quart.
Gum myrrh	-	-	-	-	1 oz.

Macerate for fourteen days, and filter.

Camphorated Eau de Cologne.

Eau de Cologne	-	-	-	-	1 quart.
Camphor	-	-	-	-	5 oz.

Turkish Pastil Lozenges,

For the use of smokers, or to prevent the taste of medicine. These lozenges are made thus:—

Fine sugar	-	-	-	-	4 lbs.
Citric acid	-	-	-	-	4 drachms.
Otto of roses	-	-	-	-	5 drops.
Grain musk	-	-	-	-	4 grains.
Otto of vitivert	-	-	-	-	$\frac{1}{2}$ drachm.

Gum tragacanth dissolved in water, enough to form the whole into a paste, tinted with liquid lake.

SECTION XVII.

HAIR-WASHES.

Rosemary Water.

Rosemary, free from stalk	-	-	-	10 lbs.
Water	-	-	-	12 gallons.

Draw off by distillation ten gallons for use in perfumery manufacture.

Rosemary Hair-wash.

Rosemary water	-	-	-	1 gallon.
Rectified spirit	-	-	-	$\frac{1}{2}$ pint.
Pearlash	-	-	-	1 oz.

Tinted with brown colouring.

Athenian Water.

Rose water	-	-	-	1 gallon.
Alcohol	-	-	-	1 pint.
Sassafras wood	-	-	-	$\frac{1}{4}$ lb.
Pearlash	-	-	-	1 oz.

Boil the wood in the rose water in a glass vessel; then, when cold, add the pearlash and spirit.

Vegetable or Botanic Extract.

Rose water	}	-	-	of each	2 quarts.
Rectified spirit					

Extrait de fleur d'orange	}	of each -	$\frac{1}{4}$ pint.
„ jasmin			
„ acacia			
„ rose			
„ tubereuse			
Extract of vanilla	-	-	$\frac{1}{2}$ „

This is a very beautifully scented hair-wash. It retails at a price commensurate with its cost.

Astringent Extract of Roses and Rosemary.

Rosemary water	-	-	-	2 quarts.
Esprit de rose	-	-	-	$\frac{1}{2}$ pint.
Rectified spirit	-	-	-	$1\frac{1}{2}$ „
Extract of vanilla	-	-	-	1 quart.
Magnesia, to clear it	-	-	-	2 oz.

Filter through paper.

Glycerine and Cantharides Lotion.

(For the Hair, if falling off.)

Mr. Startin has published the following, which is stated to be of great service.

Rosemary water	-	-	-	1 gallon.
Spirits of sal volatile	-	-	-	8 oz.
Tincture of cantharides	-	-	-	2 „
Glycerine	-	-	-	4 „

To be used with a sponge or soft hair-brush twice a day.

Saponaceous Wash, or Egg Julep.

Rectified spirit	-	-	-	1 pint.
Rose water	-	-	-	1 gallon.
Extract of rondeletia	-	-	-	$\frac{1}{2}$ pint.
Transparent soap	-	-	-	$\frac{1}{2}$ oz.
Hay saffron	-	-	-	$\frac{1}{3}$ drachm.

Shave up the soap very fine; boil it and the saffron in a quart of the rose water; when dissolved, add the remainder of the water, then the spirit, finally the rondeletia, which is used by way of perfume. After standing for two or three days, it is fit for bottling. By transmitted light, it is transparent; but by reflected light the liquid has a pearly and singularly wavy appearance when shaken.

Bandolines.

Various preparations are used to assist in dressing the hair in any particular form. Some persons use for that purpose a hard pomatum containing wax, made up into rolls, called thence *Bâton Fixateur*. The little "feathers" of hair, with which some ladies are troubled, are by the aid of these bâtons made to lie down smooth. For their formula, see p. 292.

The liquid bandolines are principally of a gummy nature, being made either with Iceland moss, or linseed and water variously perfumed, also by boiling quince-seed with water. Perfumers, however, chiefly make bandoline from gum tragacanth, which exudes from a shrub of that name which grows plentifully in Greece and Turkey.

Rose Bandoline.

Gum tragacanth	-	-	-	-	6 oz.
Rose water	-	-	-	-	1 gallon.
Otto of roses	-	.	-	-	$\frac{1}{2}$ oz.

Steep the gum in the water for a day or so. As it swells and forms a thick gelatinous mass, it must

from time to time be well agitated. After about forty-eight hours' maceration, it is then to be squeezed through a coarse clean linen cloth, and again left to stand for a few days, then passed through the cloth a second time, to ensure uniformity of consistency; when this is the case, the otto of roses is to be thoroughly incorporated. The cheap bandoline is made without the otto; for coloured bandoline, it is to be tinted with ammoniacal solution of carmine, i. e. *Bloom of Roses*. See p. 307.

Almond Bandoline

is made precisely as the above, scenting with a quarter of an ounce of otto of almonds in place of the roses.



“ Nor the sweet smell
Of different flowers in odour and in hue
Can make me any longer story tell.”

SHAKSPEARE.

A P P E N D I X.

TEST FOR ASCERTAINING THE PRESENCE OF ALCOHOL IN ESSENTIAL OILS—OTTOS.

J. J. Bernoulli recommends for this purpose acetate of potash. When to an ethereal oil, contaminated with alcohol, dry acetate of potash is added, this salt dissolves in the alcohol, and forms a solution from which the volatile oil separates. If the oil be free from alcohol, this salt remains dry therein.

Wittstein, who speaks highly of this test, has suggested the following method of applying it as the best:—In a dry test-tube, about half an inch in diameter, and five or six inches long, put not more than eight grains of powdered dry acetate of potash; then fill the tube two-thirds full with the essential oil to be examined. The contents of the tube must be well stirred with a glass rod, taking care not to allow the salt to rise above the oil; afterwards set aside for a short time. If the salt be found at the bottom of the tube dry, it is evident that the oil contains no spirit. Oftentimes, instead of the dry salt, beneath the oil is found a clear syrupy fluid, which is a solution of the salt in the spirit with which the oil was mixed. When the oil contains only a little spirit, a small portion of the solid salt will be found under the syrupy solution. Many essential oils frequently contain a trace of water, which does not materially interfere with this test, because, although the acetate of

potash becomes moist thereby, it still retains its pulverulent form.

A still more certain result may be obtained by distillation in a water-bath. All the essential oils, which have a higher boiling point than spirit, remain in the retort, whilst the spirit passes into the receiver with only a trace of the oil, where the alcohol may be recognised by the smell and taste. Should, however, a doubt exist, add to the distillate a little acetate of potash and strong sulphuric acid, and heat the mixture in a test-tube to the boiling point, when the characteristic odour of acetic ether will be manifest, if any alcohol be present.

DETECTION OF POPPY AND OTHER DRYING OILS IN ALMOND AND OLIVE OILS.

It is known that the olein of the drying oils may be distinguished from the olein of those oils which remain greasy in the air, by the first not being convertible into elaidic acid; consequently it does not become solid. Professor Wimmer has recently proposed a convenient method for the formation of elaidin, which is applicable for the purpose of detecting the adulteration of almond and olive oils with drying oils. He produces nitrous acid by treating iron filings in a glass bottle with nitric acid. The vapour of nitrous acid is conducted through a glass tube into water, upon which the oil to be tested is placed. If the oil of almonds or olives, contains only a small quantity of poppy oil when thus treated, it is entirely converted into crystallised elaidin, whilst the poppy oil swims on the top in drops.

COLOURING MATTER OF VOLATILE OILS.

BY G. E. SACHSSE.

It is well known that most ethereal oils are colourless ; however, there are a great number coloured, some of which are blue, some green, and some yellow. Up to the present time the question has not been decided, whether it is the necessary property of ethereal oils to have a colour, or whether their colour is not due to the presence of some colouring matter which can be removed. It is most probable that their colour arises from the presence of a foreign substance, as the coloured ethereal oils can at first, by careful distillation, be obtained colourless, whilst later the coloured portion passes over. Subsequent appearances lead to the solution of the question, and are certain evidence that ethereal oils, when they are coloured, owe their colour to peculiar substances which, by certain conditions, may be communicated from one oil to another. When a mixture of oils of wormwood, lemons, and cloves is subjected to distillation, the previously green-coloured oil of wormwood passes over, at the commencement colourless, while, towards the end of the distillation, after the receiver has been frequently charged, the oil of cloves distils over in very dense drops of a dark green colour. It therefore appears that the green colouring matter of the oil of wormwood has been transferred to the oil of cloves. — *Zeitschrift für Pharmacie.*

PRACTICAL REMARKS ON SPIRIT OF WINE.

BY THOMAS ARNALL.

The strength of spirit of wine is, by law, regulated by proof spirit (sp. gr. 920) as a standard ; and accordingly as it is either stronger or weaker than the above, it is called so much per cent. above or below proof. The term *per cent.* is used in this instance in a rather peculiar

sense. Thus, spirit of wine at 56 per cent. overproof, signifies that 100 gallons of it are equal to 156 gallons of proof spirit; while a spirit at 20 per cent. underproof, signifies that 100 gallons are equal to 80 gallons at proof. The rectified spirit of the Pharmacopœia is 56 per cent. overproof, and may be reduced to proof by strictly adhering to the directions there given—viz., to mix five measures with three of water. The result, however, will not be eight measures of proof spirit; in consequence of the *contraction* which ensues, there will be a deficiency of about ζ iv. in each gallon. This must be borne in mind in preparing tinctures.

During a long series of experiments on the preparation of ethers, it appeared a desideratum to find a ready method of ascertaining how much spirit of any density would be equal to one chemical equivalent of absolute alcohol. By a modification of a rule employed by the Excise, this question may be easily solved. The Excise rule is as follows:—

To reduce from any given strength to any required strength, *add* the *overproof* per centage to 100, or *subtract* the *underproof* per centage from 100. Multiply the result by the quantity of spirit, and divide the product by the number obtained by *adding* the *required* per centage overproof, or *subtracting* the *required* per centage underproof, to or from 100, as the case may be. The result will give the measure of the spirit at the strength required.

Thus, suppose you wished to reduce 10 gallons of spirit, at 54 overproof, down to proof, add 54 to 100 = 154; multiply by the quantity, 10 gallons (154×10), = 1540. The required strength being proof, of course there is nothing either to add to or take from 100; therefore, 1540 divided by 100 = 15.4 gallons at proof; showing that 10 gallons must be made to measure 15 gallons 3 pints, 4 fl. oz., by the addition of water.

To ascertain what quantity of spirit of any given strength will contain one equivalent of absolute alcohol. Add the overproof per centage of the given spirit to 100, as before; and with the number thus obtained divide 4062·184. The result gives in gallons the quantity equal to four equivalents (46×4).

Example.—How much spirit at 54 per cent. overproof is equal to 1 equivalent of absolute alcohol?

Here,

$$54 + 100 = 154 \text{ and } \frac{4062 \cdot 183}{154} = 26 \cdot 3778 \text{ galls., or } 26 \text{ galls.}$$

3 pts.

which, divided by 4, gives 6 gallons, 4 pints, 15 oz.

Suppose the spirit to be 60 overproof,—

$$\text{then } \frac{4062 \cdot 183}{100 + 60} = 25 \cdot 388 \text{ gallons, } \left\{ \begin{array}{l} \text{one-fourth of which is} \\ \text{equal to 6 gallons, 2} \\ \text{pints, } 15\frac{1}{2} \text{ oz.} \end{array} \right.$$

This rule is founded on the following data. As a gallon of water weighs 10 lbs., it is obvious that the specific gravity of any liquid multiplied by 10 will give the weight of one gallon. The specific gravity of absolute alcohol is ·793811; hence, the weight of 1 gallon will be 7.93811 lbs., and its strength is estimated at 75·25 overproof.

$$4 \text{ equivalents of alcohol} = 46 \times 4 = 184,$$

and

$$23 \cdot 17936 \text{ gallons} \times 7 \cdot 93811 \text{ lbs. per gallon, also} \\ = 184 \cdot 0003094.$$

Hence it appears that 23·17936 gallons of absolute alcohol are equal to 4 equivalents. By adding the overproof per centage (75·25) to 100, and multiplying by the quantity (23·17936 gallons), we get the constant number 4062·183.

The rule might have been calculated so as to show *at*

once the equivalent, without dividing by 4; but it would have required several more places of decimals: it will give the required quantity to a fraction of a fluid drachm.

[These remarks are very useful, and are the kind of observations so well suited to practical men.—SEPTIMUS PIESSE.]

A SIMPLE AND CERTAIN METHOD TO DETERMINE THE COMMERCIAL VALUE OF SOAP.

BY DR. ALEXANDER MÜLLER.

In consequence of the tedious process by which the fatty acids are determined in one portion of the soap, and the alkali by the incineration of another, I consider the following method is not unworthy of publication, because it appears to afford quicker and more correct results by reason of the greater simplicity of the manipulation. It is available principally for soda soaps, which are the most common; but it may be also employed with corresponding alterations for soaps which have other bases.

A piece of soap weighing two or three grammes is dissolved in a tared beaker glass of about 160 cubic centimetres capacity with 80 to 100 cubic centimetres of water, by heat, in a water-bath, and then three or four times the quantity of diluted sulphuric acid, or as much as is necessary to decompose the soap, added from a burette. When, after repeated agitation, the fatty acids have separated in a transparent clear stratum from the aqueous solution, it is allowed to cool, and then the contents of the beaker glass are placed in a moistened filter, which has been previously dried at 212° Fahr. and weighed. The contents of the filter are washed until their acid reaction, disappears. In the meanwhile the beaker glass is placed in a steam-bath, so that, it being already dry, it may support

the washed and partly dry filter, which is laid on the mouth of the glass as if it were in the funnel. The fatty acids soon pass through the paper, and for the most part flow ultimately to the bottom of the beaker glass; the increase of weight of which, after cooling, and the subtraction of the weight of the filter, gives the quantity of fatty acids present in the soap. A second drying and weighing is not necessary, if on the cold sides of the interior of the glass no damp is to be observed, which is occasioned by a trace of water still present. If the quantity of oxide of iron added to marble the soap is considerable, it may be easily found by incinerating the filter and determining the weight of the residue.

The fluid which runs from the fatty acids on the filter, which, with the washings, has been preserved in a sufficiently large beaker glass, is coloured with tincture of litmus and decomposed with a test alkaline solution until the blue colour appears. The difference of the quantity of alkali required to neutralize the sulphuric acid, and the quantity of sulphuric acid used in the first instance, allows a calculation to be made as to the quantity of effective alkali in the soap, for example:—

23·86	grms. of soap (partly cocoa-nut-oil soap).
17·95	„ fatty acids with filter.
04·44	filter

13·51 grms. of hydrates of fatty acids=56.62 per cent.
 28·00 cub. cent. of the diluted sulphuric acid applied for the decomposition of the soap, of which 100 cub. cent. represent 2,982 grms. of carbonate of soda.
 17·55 cub. cent. of alkaline fluid, which were used for the saturation of the above acid, and of which 100 cub. cent. saturate an equal quantity of that acid.

10·45 cub. cent. of the sulphuric acid necessary for the alkali contained in the soap, representing 0,1823 grms. of soda=7,64 per cent.

A determination of the alkali as a sulphate afforded in another portion of soap 9·57 per cent. of soda, because the sulphate of soda and chloride of sodium present in the soap gave up their alkali.

The alkaline fluid applied by me was a saccharine solution of lime, which can be naturally replaced by a solution of soda, and must be if the chloride of sodium and sulphate of soda mixed with the soap shall be determined in the following way:—

The fluid again exactly neutralized with alkali is evaporated to dryness, and the residue gently heated to redness. As in the above manipulation, the fluid was not heated to the boiling point, the original chloride of sodium and sulphate of soda are contained in the weighed residue, besides the soda of the soap and that which has been added with the sulphuric acid, forming sulphate of soda. A second exposure to a red heat with sulphuric acid converts the whole residue into sulphate of soda, and from the increase of weight, by a comparison of the equivalents of Na Cl and Na O, S O₃, the quantity of the former may be decided. According to the equivalents which Kopp furnished in 1850, the increase of weight to the chloride of sodium is as 1: 4·68. The original sulphate of soda must be, lastly, found by the subtraction of the same salt formed plus the calculated chloride of sodium from the first heated residue.

In practice, it is seldom necessary to proceed with the determination of the chloride of sodium and sulphate of soda, except with stirred and cocoa-nut oil soaps; certainly less of the truth is seen if, after the above determination of the fatty acids and the effective alkali, the absent per centage of water is introduced in the calculation, than if the water is reckoned, which is never completely evolved from soap, even technically prepared at 302° Fahr., and another determination made of the fatty

acids or alkali *en bloc* the fatty acids, or even the alkaline contents.

The method here given partakes of the usual imperfections, that the fatty acids as well as the unsaponified soap are equally estimated, and the mixed hydrate or carbonate of the alkali as well as the combined alkali. The presence of the carbonate can be easily recognised by the foaming of the soap solution upon the addition of the sulphuric acid. These imperfections, however, are of little importance.

It must be granted that the minutely correct determination of the constitution of soap must be always yielded up to those who are technically conversant with this department of chemistry, the estimation of free alkali and unchanged fat included in it, at least, by certain ages of the soap. Further, a considerable excess of one or another ingredient soon betrays itself by a corresponding departure, from the soap, of the characteristic properties of a good product: a small excess can be judged sufficiently exact from the proportion of the alkali, which, supposing soda present, should not amount to more than 13 per cent. with a pure cocoa-nut-oil soap, not less than 11·5 per cent. with a tallow soap; but with palm oil and mixed soaps the one or the other limit approximates.—*Journal für Praktische Chemie.*

PERFUMES AS PREVENTIVES OF MOULDINESS.

An interesting paper on this subject has been published by Dr. Macculloch. We presume our readers are aware that mouldiness is occasioned by the growth of minute vegetables. Ink, paste, leather, and seeds, are the substances that most frequently suffer from it. The effect

of cloves in preserving ink is well known; any of the essential oils answer equally well. Leather may be kept free from mould by the same substances. Thus Russian leather, which is perfumed with the tar of birch, never becomes mouldy; indeed it prevents it from occurring in other bodies. A few drops of any essential oil are sufficient also to keep books entirely free from it. For harness, oil of turpentine is recommended. Bookbinders, in general, employ alum for preserving their paste; but mould frequently forms on it. Shoemakers' resin is sometimes also used for the same purpose; but it is less effectual than oil of turpentine. The best preventives, however, are the essential oils, even in small quantity, as those of peppermint, anise, or cassia, by which paste may be kept almost any length of time; indeed, it has, in this way, been preserved for years. The paste recommended by Dr. Macculloch is made in the usual way, with flour, some brown sugar, and a little corrosive sublimate; the sugar keeping it flexible when dry, and the sublimate preventing it from fermenting, and from being attacked by insects. After it is made, a few drops of any of the essential oils are added. Paste made in this way dries when exposed to the air, and may be used merely by wetting it. If required to be kept always ready for use, it ought to be put into covered pots. Seeds may also be preserved by the essential oils; and this is of great consequence, when they are to be sent to a distance. Of course moisture must be excluded as much as possible, as the oils or ottos prevent only the bad effects of mould.

ARTIFICIAL PREPARATION OF ODOURS
RESEMBLING THE FRAGRANCE
OF CERTAIN FRUITS.

FUSEL OIL.

BY W. BASTICK.

This organic compound was first discovered by Scheele, as one of the distillation products of the wort obtained from the fermentation of potatoes. It has been subsequently examined by Pelletier, Dumas, Cahours, and others. It is generally now termed the hydrate of the oxide of amyl, from amyl being supposed to be its base or radical, as cyanogen is regarded to be the radical of another series of compounds.

It passes over towards the termination of the distillation process in a white turbid fluid, which consists of a watery and alcoholic solution of the fusel oil. The crude oil, consisting of about one-half of its weight of alcohol and water, may be purified by being shaken with water and re-distilled, with the previous addition of chloride of calcium. When the temperature of the contents of retort reaches 296° Fahr., pure fusel oil distils over.

Fusel oil is a colourless oily fluid, which possesses at first not an unagreeable odour, but at last is very disgusting, producing oppression at the chest and exciting cough. It has a sharp hot taste, and burns with a white blue flame. It boils at 296° Fahr., and at a temperature of—4° Fahr. it becomes solid, and forms crystals. Its specific gravity at 59° Fahr. is 0,8124, and its formula $C_{10} H_{12} O_2$. On paper it produces a greasy stain, which disappears by heat, and when exposed to the action of the air it acquires an acid reaction. Fusel oil is slightly soluble in water, to which it imparts its odour; and soluble in all proportions in alcohol, ether, volatile, and fixed oils, and acetic acid. It dissolves phosphorus,

sulphur, and iodine without any noticeable change, and also mixes with caustic soda and potash. It rapidly absorbs hydrochloric acid, with the disengagement of heat. When mixed with concentrated sulphuric acid, the mixture becomes of a violet-red colour, and bisulphate of amyloxide is formed. Nitric acid and chlorine decompose it. By its distillation with anhydrous phosphoric acid, a fluid, oily combination of hydrogen and carbon results. By oxidation with bichromate of potash and sulphuric acid, fusel oil yields valerianic acid, which is used in medicine, and apple-oil, employed as a flavouring ingredient in confectionery.

ARTIFICIAL ESSENCE OF PINE APPLE.

W. BASTICK.

The above essence is, butyric ether more or less diluted with alcohol; to obtain which pure, on the large scale and economically, the following process is recommended:—

Dissolve 6 lbs. of sugar and half an ounce of tartaric acid, in 26 lbs. of boiling water. Let the solution stand for several days; then add 8 ounces of putrid cheese broken up, 3 lbs. of skimmed and curdled sour milk and 3 lbs. of levigated chalk. The mixture should be kept and stirred daily in a warm place, at the temperature of about 92° Fahr., as long as gas is evolved, which is generally the case for five or six weeks.

The liquid thus obtained is mixed with an equal volume of cold water, and 8 lbs. of crystallised carbonate of soda, previously dissolved in water, added. It is then filtered from the precipitated carbonate of lime; and the filtrate is to be evaporated down to 10 lbs., then 5½ lbs. of sulphuric acid, previously diluted with an equal weight of water, are to be carefully added. The butyric acid, which separates on the surface of the liquid as a dark-

coloured oil, is to be removed, and the rest of the liquid distilled; the distillate is now neutralised with carbonate of soda, and the butyric acid separated as before, with sulphuric acid.

The whole of the crude acid is to be rectified with the addition of an ounce of sulphuric acid to every pound. The distillate is then saturated with fused chloride of calcium, and re-distilled. The product will be about 28 ounces of pure butyric acid. To prepare the butyric acid, or essence of pine apple, from this acid, proceed as follows:—Mix, by weight, three parts of butyric acid with six parts of alcohol, and two parts of sulphuric acid in a retort, and submit the whole, with a sufficient heat, to a gentle distillation, until the fluid which passes over ceases to emit a fruity odour. By treating the distillate with chloride of calcium, and by its re-distillation, the pure ether may be obtained.

The boiling point of butyric ether is 238° Fahr. Its specific gravity, 0,904, and its formula $C_{12}H_{12}O_4$, or $C_4H_5O + C_8H_7O_3$.

Bensch's process, above described, for the production of butyric acid, affords a remarkable exemplification of the extraordinary transformations that organic bodies undergo in contact with ferment, or by catalytic action. When cane sugar is treated with tartaric acid, especially under the influence of heat, it is converted into grape sugar. This grape sugar, in the presence of decomposing nitrogenous substances, such as cheese, is transformed in the first instance into lactic acid, which combines with the lime of the chalk. The acid of the lactate of lime, thus produced, is by the further influence of the ferment changed into butyric acid. Hence, butyrate of lime is the final result of the catalytic action in the process we here have recommended.

PREPARATION OF ARTIFICIAL ESSENCE
OF QUINCE.

DR. R. WAGNER.

It has been believed, until the most recent period, that the peel of quinces contains cœnanthylate of ethyl-oxide. New researches, however, have led to the supposition that the odorous principle of quinces is derived from the ether of pelargonic acid. In my last research on the action of nitric acid on oil of rue, I found that besides the fatty acids, which Gerhardt had already discovered, pelargonic acid is formed. This process may be advantageously employed for the preparation of crude pelargonate of ethyloxyde, which, on account of its extremely agreeable odour, may be applied as a fruit essence equally with those prepared by Dobereiner, Hoffman, and Fehling. For the preparation of the liquid, which can be named the essence of quince, oil of rue is treated with double its quantity of very diluted nitric acid, and the mixture heated until it begins to boil. After some time two layers are to be observed in the liquid: the upper one is brownish, and the lower one consists of the products of the oxidation of oil of rue and the excess of nitric acid. The lower layer is freed from the greater part of its nitric acid by evaporation in a chloride of zinc bath. The white flocks frequently found in the acid liquid, which are probably fatty acids, are separated by filtration. The filtrate is mixed with spirit, and long digested in a gentle heat, by which a fluid is formed which has the agreeable odour of quince in the highest degree, and may be purified by distillation.—*Journal für Praktische Chemie.*

PREPARATION OF RUM-ETHER.

Take of black oxide of manganese, of sulphuric acid, each twelve pounds; of alcohol, twenty-six pounds; of strong acetic acid, ten pounds. Mix and distil twelve pints. The ether, as above prepared, is an article of commerce in Austria, being the body to which rum owes its peculiar flavour.—*Austrian Journal of Pharmacy*.

ARTIFICIAL ODOUR OF PEARS.

M. FEHLING.

This is an alcoholic solution of acetate of amyloxyde, and acetate of ethyloxyde. For its preparation, one pound of glacial acetic acid is added to an equal weight of fusel oil* (which has been prepared by being washed with soda and water, and then distilled at a temperature between 254° and 284° Fahr.), and mixed with half a pound of sulphuric acid. The mixture is digested for some hours at a temperature of 254°, by which means acetate of amyloxyde separates, particularly on the addition of some water. The crude acetate of amyloxyde obtained by separation, and by the distillation of the liquid to which the water has been added, is finally purified by being washed with soda and water. Fifteen parts of acetate of amyloxyde are dissolved with half a part of acetic ether in 100 or 120 parts of alcohol; this is the essence of pear, which, when employed to flavour sugar or syrup, to which a little citric or tartaric acid has been added, affords the flavour of bergamot pears, and a fruity, refreshing taste.

* See Fusel Oil, by W. Bastick, p. 331.

ON THE APPLICATION OF ORGANIC CHEMISTRY TO PERFUMERY.

BY DR. A. W. HOFFMAN.

Cahours' excellent researches concerning the essential oil of *Gaultheria procumbens* (a North American plant of the natural order of the Ericinæ of Jussieu), which admits of so many applications in perfumery*, have opened a new field in this branch of industry. The introduction of this oil among compound ethers must necessarily direct the attention of perfumers† toward this important branch of compounds, the number of which is daily increasing by the labours of those who apply themselves to organic chemistry. The striking similarity of the smell of these ethers to that of *fruit* had not escaped the observation of chemistry; however, it was reserved to practical men to discover by which choice and combinations it might be possible to imitate the scent of peculiar fruits to such a nicety, that makes it probable that the scent of the fruit is owing to a natural combination identical to that produced by art; so much so, as to enable the chemist to produce from fruits the said combinations, provided he could have at his disposal a sufficient quantity to operate upon. The manufacture of artificial aromatic oils for the purpose of perfumery‡ is, of course, a recent branch of industry; nevertheless, it has already fallen into the hands of several distillers, who produce sufficient quantity to supply the trade; a fact, which has not escaped the observation of the Jury at the London Exhibition. In visiting the stalls of English and French confectioners at the Crystal Palace, we found a great variety of these chemical perfumes, the applications of which were at the same time practically illustrated by confectionary flavoured by them. However, as most of the samples of

* Qy. Confectionary? † Qy. Confectioners? ‡ Qy. Confectionary?

the oils sent to the Exhibition were but small, I was prevented, in many cases, from making an accurate analysis of them. The largest samples were those of a compound labelled "pear oil," which, by analysis, I discovered to be an alcoholic solution of pure acetate of amyloxyde. Not having sufficient quantity to purify it for combustion, I dissolved it with potash, by which free fusel oil was separated, and determined the acetic acid in the form of a silver salt.

0·3080 gram. of silver salt = 0·1997 gram. of silver.

The per centage of silver in acetate of silver is, according to

Theory.	Experiment.
64·68	64·55

The acetate of amyloxyde, which, according to the usual way of preparing it, represents one part sulphuric acid, one part fusel oil, and two parts of acetate of potash, had a striking smell of fruit, but it acquired the pleasant flavour of the jargonelle pear only after having been diluted with six times its volume of spirit of wine.

Upon further inquiry, I learned that considerable quantities of this oil are manufactured by some distillers,—from fifteen to twenty pounds weekly,—and sold to confectioners, who employ it chiefly in flavouring pear-drops, which are nothing else but barley-sugar flavoured with this oil.

I found, besides the pear oil, also an *apple oil*, which, according to my analysis, is nothing but valerianate of amyloxyde. Every one must recollect the insupportable smell of rotten apples which fills the laboratory whilst making valerianic acid. By operating upon this raw distillate produced with diluted potash, valerianic acid is removed, and an ether remains behind, which, diluted in five or six times its volume of spirits of wine, is possessed of the most pleasant flavour of apples.

The essential oil* most abundant in the Exhibition was the pine-apple oil, which, as you well know, is nothing else but the butyrate of ethyloxyde. Even in this combination, like in the former, the pleasant flavour or scent is only attained by diluting the ether with alcohol. The butyric ether, which is employed in Germany to flavour bad rum, is employed in England to flavour an acidulated drink called pine-apple ale. For this purpose they generally do not employ pure butyric acid, but a product obtained by saponification of butter, and subsequent distillation of the soap with concentrated sulphuric acid and alcohol; which product contains, besides the butyric ether, other ethers, but nevertheless can be used for flavouring spirits. The sample I analysed was purer, and appeared to have been made with pure butyric ether.

Decomposed with potash and changed into silver salt, it gave

0.4404 gram. of silver salt = 0.2437 gram. of silver.

The per centage of silver in the butyrate of silver is according to

Theory.	Experiment.
55.38	55.33

Both English and French exhibitors have also sent samples of cognac oil and grape oil, which are employed to flavour the common sorts of brandy. As these samples were very small, I was prevented from making an accurate analysis. However, I am certain that the grape oil is a combination of amyli, diluted with much alcohol; since, when acted upon with concentrated sulphuric acid, and the oil freed from alcohol by washing it with water, it gave amyli sulphuric acid, which was identified by the analysis of the salt of barytes.

1.2690 gram. of amyli sulphate of barytes gave 0.5825

* The writer means ether!

gram. of sulphate of barytes. This corresponds to 45·82 per cent. of sulphate of barytes.

Amylsulphate of barytes, crystallised with two equivalents of water, contains, according to the analysis of Cahours and Kekule, 45·95 per cent. of sulphate of barytes. It is curious to find here a body, which, on account of its noxious smell, is removed with great care from spirituous liquors, to be applied under a different form for the purpose of imparting to them a pleasant flavour.

I must needs here also mention the artificial oil of bitter almonds. When Mitscherlich, in the year 1834, discovered the nitrobenzol, he would not have dreamed that this product would be manufactured for the purpose of perfumery, and, after twenty years, appear in fine labelled samples at the London Exhibition. It is true that, even at the time of the discovery of nitrobenzol, he pointed out the striking similarity of its smell to that of the oil of bitter almonds. However, at that time, the only known sources for obtaining this body were the compressed gases and the distillation of benzoic acid, consequently the enormity of its price banished any idea of employing benzol as a substitute for oil of bitter almonds. However, in the year 1845, I succeeded, by means of the anilin-reaction, in ascertaining the existence of benzol in common coal-tar oil; and, in the year 1849, C. B. Mansfield proved, by careful experiments, that benzol can be won without difficulty in great quantity from coal-tar oil. In his essay, which contains many interesting details about the practical use of benzol, he speaks likewise of the possibility of soon obtaining the sweet-scented nitrobenzol in great quantity. The Exhibition has proved that this observation has not been left unnoticed by the perfumers. Among French perfumeries we have found, under the name of artificial oil of bitter almonds, and under the still more poetical name of "essence de mirbane," several samples of essential oils, which are no

more nor less than nitrobenzol. I was not able to obtain accurate details about the extent of this branch of manufacture, which seems to be of some importance. In London, this article is manufactured with success. The apparatus employed is that of Mansfield, which is very simple: it consists of a large glass worm, the upper extremity of which divides in two branches of tubes, which are provided with funnels. Through one of these funnels passes a stream of concentrated nitric acid; the other is destined as a receiver of benzol, which, for this purpose, requires not to be quite pure; at the angle from where the two tubes branch out, the two bodies meet together, and instantly the chemical combination takes place, which cools sufficiently by passing through the glass worm. The product is afterwards washed with water, and some diluted solution of carbonate of soda; it is then ready for use. Notwithstanding the great physical similarity between nitrobenzol and oil of bitter almonds, there is yet a slight *difference in smell which can be detected by an experienced nose*.* However, nitrobenzol is very useful in scenting soap, and might be employed with great advantage by confectioners and cooks, particularly on account of its safety, being entirely free from prussic acid.

There were, besides the above, several other artificial oils; they all, however, were more or less complicated, and in so small quantities that it was impossible to ascertain their exact nature, and it was doubtful whether they had the same origin as the former.

The application of organic chemistry to perfumery is quite new; it is probable that the study of all the ethers or ethereal combinations already known, and of those which the ingenuity of the chemist is daily discovering, will enlarge the sphere of their practical applications. The capryl-ethers lately discovered by Bouis are remark-

* See "Almond."

able for their aromatic smells (the acetate of capryloxyde is possessed of the most intense and pleasant smell), and they promise a large harvest to the manufacturers of perfumes.

[If the word "*flavour*" had been used by the various authors who have written upon this subject, in place of the word "perfume," and the word "*ether*" in place of "oil" and "essential oil," the dissemination of an erroneous idea would have been prevented: the word perfume, applied to pear oil, pine-apple oil, &c., implies, and the general tenor of the remarks of the writers leads the reader to infer, that these substances are used by perfumers, who not only do not, but cannot, use them in their trade; because these artificial essences, or ethers, when poured upon a handkerchief and held to the nose, act, as is well known, like chloroform, producing also most serious irritation of the air pipes.

But for *flavouring* nectar, lozenges, sweetmeats, &c., these ethers, or oils as the writers term them, are extensively used, and quite in accordance with assertions of Hoffman, Playfair, Fehling, and Bastick. However, the glorious achievements of modern chemistry have not lost anything by this misapplication of a trade term.—
SEPTIMUS PIESSE.]

42. Chapel Street, Edgeware Road.

OTTOS FROM PLANTS.

Quantities of Ottos, otherwise Essential Oils, yielded by various Plants.

	lbs.		of otto.
Orange-peel -	- 10	yield about	1 oz.
Dry marjoram herb -	20	„	3 „
Fresh „ „ -	100	„	3 „
„ Peppermint -	100	„	3 to 4 „
Dry „ -	25	„	3 to 4 „
„ Origanum -	25	„	2 to 3 „
„ Thyme -	20	„	1 to 1½ „
„ Calmus -	25	„	3 to 4 „
Anise-seed -	25	„	9 to 12 „
Caraway -	25	„	16 „
Cloves -	1	„	2½ „
Cinnamon -	25	„	3 „
Cassia -	25	„	3 „
Cedar wood -	28	„	4 „
Mace -	2	„	3 „
Nutmegs -	2	„	3 to 4 „
Fresh balm herb -	60	„	1 to 1½ „
Cake of bitter almond -	14	„	1 „
Sweet flag root -	112	„	16 „
Geranium leaves -	112	„	2 „
Lavender flowers -	112	„	30 to 32 „
Myrtle leaves -	112	„	5 „
Patchouli herb -	112	„	28 „
Provence rose blossom -	112	„	1½ to 2 drachms.
Rhodium wood -	112	„	3 to 4 oz.
Santal wood -	112	„	30 „
Vitivert or kus-kus-root -	112	„	15 „
Violets -	112	„	½ drachm.

WEIGHTS AND MEASURES.

French Weights and Measures compared with English.

Litres.	Imperial Gallons.	Grammes.	Troy Grains.	Kilo-grammes.	Lbs. Avoird.
1 ...	0·22010	1 ...	15·434	1 ...	2·20486
2 ...	0·44019	2 ...	30·868	2 ...	4·40971
3 ...	0·66029	3 ...	46·302	3 ...	6·61457
4 ...	0·88039	4 ...	61·736	4 ...	8·81943
5 ...	1·10048	5 ...	77·170	5 ...	11·02429
6 ...	1·32058	6 ...	92·604	6 ...	13·22914
7 ...	1·54068	7 ...	108·038	7 ...	15·43400
8 ...	1·76077	8 ...	123·472	8 ...	17·63886
9 ...	1·98087	9 ...	138·906	9 ...	19·84371

English Weights and Measures compared with French.

Imp. Gallons.	Litres.	Troy Grains.	Grammes.	Lbs. Avoird.	Kilo-grammes.
1 ...	4·54346	1 ...	0·06479	1 ...	0·45354
2 ...	9·08692	2 ...	0·12958	2 ...	0·90709
3 ...	13·63038	3 ...	0·19438	3 ...	1·36063
4 ...	18·17384	4 ...	0·25917	4 ...	1·81418
5 ...	22·71730	5 ...	0·32396	5 ...	2·26772
6 ...	27·26076	6 ...	0·38875	6 ...	2·72126
7 ...	31·80422	7 ...	0·45354	7 ...	3·17481
8 ...	36·34768	8 ...	0·51834	8 ...	3·62835
9 ...	40·89114	9 ...	0·58313	9 ...	4·08190

The standard of Lineal Measure in France is the *Mètre*.
39·37100 English Inches make a *Mètre*.

The standard of Square or Superficial Measure is the *Are*.
119·6046 Square Yards make an *Are*.

The standard of Cubic or Solid Measure is the *Stère*.
35·317 Solid Feet make a *Stère*.

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THE JOURNAL OF ALBERT GARDNER'S ADVENTURE UP THE
NORTH-WEST PASSAGE OF THE NORTH-WEST PASSAGE.

BY ALBERT GARDNER, ESQ., F.R.S.E., F.R.S., F.R.G.S., F.R.S.M., F.R.S.N., F.R.S.P., F.R.S.S., F.R.S.T., F.R.S.W., F.R.S.Z., F.R.S.A., F.R.S.C., F.R.S.I., F.R.S.D., F.R.S.F., F.R.S.G., F.R.S.H., F.R.S.J., F.R.S.K., F.R.S.L., F.R.S.M., F.R.S.N., F.R.S.O., F.R.S.P., F.R.S.Q., F.R.S.R., F.R.S.S., F.R.S.T., F.R.S.U., F.R.S.V., F.R.S.W., F.R.S.X., F.R.S.Y., F.R.S.Z.

THE DISCOVERY

NORTH-WEST PASSAGE

AND THE DISCOVERY OF THE NORTH-WEST PASSAGE.

(PART I.)

BY ALBERT GARDNER, ESQ., F.R.S.E., F.R.S., F.R.G.S., F.R.S.M., F.R.S.N., F.R.S.P., F.R.S.S., F.R.S.T., F.R.S.U., F.R.S.V., F.R.S.W., F.R.S.X., F.R.S.Y., F.R.S.Z.

WITH A MAP OF THE NORTH-WEST PASSAGE, AND A PLAN OF THE

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