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PLATE I.

1. *Anemone palmata*.
3. *Papaver pinnatifidum*.

2. *Papaver setigerum*.
4. *Nigella damascena*.



# FLOWERING PLANTS OF THE RIVIERA

*A DESCRIPTIVE ACCOUNT OF 1800 OF THE MORE  
INTERESTING SPECIES*

BY

H. STUART THOMPSON, F.L.S.

AUTHOR OF "ALPINE PLANTS OF EUROPE," "SUB-ALPINE PLANTS," ETC.

WITH AN INTRODUCTION ON RIVIERA VEGETATION

BY

A. G. TANSLEY, M.A.

UNIVERSITY LECTURER IN BOTANY, CAMBRIDGE  
EDITOR OF "TYPES OF BRITISH VEGETATION," ETC.

*24 COLOURED PLATES (112 FIGURES), AFTER WATER-COLOUR  
DRAWINGS, BY CLARENCE BICKNELL, AND REPRODUCTIONS  
OF 16 PHOTOGRAPHS OF VEGETATION BY THE AUTHOR*

LONGMANS, GREEN AND CO.

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1914

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P R E F A C E .

BOTANISTS, and indeed many other visitors to the French and Italian Riviera, have long wanted a portable book descriptive of the numerous Flowering Plants to be found on those coasts and the adjoining hills; and it is believed that an illustrated work with short descriptions of about 1800 of the commoner and of the more interesting plants will be found useful. We are unaware of the existence of any book descriptive of a large proportion of the Riviera plants alone. Several books of a more or less popular nature have been published during recent years, but they have dealt with other features besides the flowers. The best of these is the beautifully illustrated and extremely readable "Riviera Nature Notes," by the modest "C. C.". The late Professor Strasburger's "Rambles on the Riviera" should also be mentioned.

Ardoino's "Flore Analytique du Dépt. des Alpes-Maritimes," published in 1867, is a useful account of the Flowering Plants and Ferns of that department; very frequent reference has been made to it, but, as "C. C." remarked, it has been found to contain many errors. The splendid work of M. Emile Burnat ("Flore des Alpes-Maritimes"), 1892-1906, does not make the progress we should like to see: four volumes (to Umbelliferæ only) have hitherto appeared; and though so elaborate it is not primarily descriptive, nor is it illustrated. For the adjoining Department of the Var the "Catalogue des Plantes Vasculaires" was published in 1908 by the late Abel Albert and M. Emile Jahandiez. This useful work is still less a descriptive "Flora," though it contains some interesting notes and photographs. I am indebted to these two French botanists for much information in regard to the habitats, times of flowering and localities of many of the species. I have also to thank M. Jahandiez for kind help in his Library and Herbarium at Carqueiranne.

I have found Mr. Clarence Bicknell's large illustrated volume (now out of print), entitled "Flowering Plants and Ferns of the Riviera and Adjoining Mountains" (1885), very helpful, though it contains descriptions and figures of not more than 220 plants. The same writer's "Flora of Bordighera and San Remo" (1896) is a catalogue of the wild plants of that neighbourhood, which contains many original notes of great value. Moggridge's "Contributions to the Flora of Mentone and to a Winter Flora of the Riviera" (1866-71) is a costly work somewhat similar to Mr. Bicknell's larger volume.

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AGRICULTURE

It contains ninety-seven beautifully coloured plates on which some 138 species are figured. It has long been out of print.

The present work, intended chiefly for tourists, is an attempt to give short descriptions of about 1800 of the Flowering Plants growing wild on the French Riviera, as far as San Remo in Italy, and the hill country to 1000 metres, or about 3300 feet, is included. It was impossible to make a book of this size include characters of the plants of the higher mountains, or indeed all the species of the plains and hills. However, brief allusion is made to many other plants of the district, including some characteristic introductions which form such salient features in the landscape, and comparatively few species which occur within the area treated are not mentioned at least by name. A list of the Ferns is also given. The flora is so rich that in the Department of the Var alone there are not less than 2140 species (excluding the Ferns), besides many sub-species which are given specific rank by some botanists.

For several reasons, and particularly because I have spent more time in the Var, that Department is dealt with more fully than the Department of les Alpes-Maritimes. Moreover, there is a far greater area of unspoiled littoral in the Var. The word "littoral" is used in the text in a general way, not for the coast only but to include the stretch of comparatively low land within reasonable distance of the seaboard. Much of it comprises low hills covered with Pines, Oaks of several kinds, and *maquis*.

Very little attention has been paid here to some of the large "critical" genera, such as *Rubus*, *Rosa*, *Hieracium* and *Salix*; nor is there space for a full rendering of the Sedges and Grasses, though some eighty-five of the Grasses are briefly characterized. For the same reason comparatively few varieties are mentioned, and such a family as Umbelliferæ and some of the Apetalous families, such as Polygonaceæ and Chenopodiaceæ, are somewhat summarily treated. Many of these plants are not only inconspicuous weeds, some of them well-known in the British Isles, but they flower in the late summer when few visitors are in the South.

The nomenclature does not follow rigidly the Vienna Rules of 1905; and in some cases a well-known name is purposely left, even though it may not be the earliest name. Sometimes a synonym is added. English names are given to most of the plants which appear in Great Britain, but it was not thought desirable to coin many other English names.

An effort has been made to compile tables or keys to all the genera occurring in the area. These have been based upon the arrangement in Hooker's "Student's Flora of the British Isles," and supplemented by reference to Coste's "Flore de la France," Arcan-geli's "Flora Italiana," Bentham's "Handbook of the British Flora," Babington's "Manual of British Botany," and other works. Owing to there being no writer on western Mediterranean plants but Arcan-geli who had adopted Hooker's tabular system of genera, great diffi-



culty was often experienced in making such generic keys uniform. I hope, however, that the result may be found useful to those students who are accustomed to work with keys, which at their best are not always reliable.

The synopsis of the Families is chiefly based upon the arrangement of Bentham and Hooker, which adhered closely to that of de Jussieu as modified by de Candolle. Dr. Rendle's "Classification of Flowering Plants" (Vol. I, Gymnosperms and Monocotyledons) has also been consulted; and the author has kindly given me advice.

I am greatly indebted to Mr. Clarence Bicknell, of Bordighera, for kindly lending me a number of his water-colour drawings of flowers for reproduction in the work. Though the reproductions are necessarily smaller than one could wish, they will greatly add to the value of the book. The little half-tone vegetation scenes are selected from a large number of photographs taken by me in 1912 and 1913. I have also to thank my friend Mr. A. G. Tansley, M.A., of Cambridge, not only for help and encouragement but for his kindness in writing an Introduction on Riviera Vegetation; and my friends Messrs. H. W. Pugsley, B.A., and C. E. Salmon, F.L.S., for revising the genera *Fumaria* and *Statice* respectively. To Mr. J. F. Duthie, B.A., I am indebted also for some help last spring on the Riviera; while Mr. Raine of Hyères has in the past supplied me with specimens and shown me where interesting or rare plants grow in his neighbourhood. Lastly, Dr. B. Daydon Jackson, General Secretary of the Linnean Society, has always been ready to give prompt assistance from his vast store of knowledge.

The author of the charming "Riviera Nature Notes" (Mr. Comerford-Casey) said he did not confine himself to remarks about the structure and affinities of the different species; "for many of the plants which surround us here have an interest other than botanical. They are connected with history, with mythology and with the outward symbolism of religion: they are enshrined in the literature of Rome and Greece and Palestine, and associated with the progress of mankind. To lose sight of this would be to do scanty justice to the subject." Because it was impossible to lengthen the present work to include many such interesting things, makes me rejoice all the more that this aspect was treated so admirably by "C. C." Many useful notes on the properties of some of the plants are to be found in Professor Penzig's little "Flore coloriée de poche du Littoral Méditerranéen," a book which deserves to be better illustrated.

That there may be errors in a work of this description goes without saying, for, as M. Favre says, "il n'y a que ceux qui ne font rien qui ne se trompent pas"; but it is hoped they are of no great seriousness. However, the author will gladly avail himself of any suggestions for a future edition, if they are kindly sent to him through the publishers.

H. S. THOMPSON



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## ON COLLECTING AND PRESERVING PLANTS.<sup>1</sup>

A FEW hints on how to collect plants and dry and mount them for an herbarium may be useful to some readers, particularly as the subject is discussed either very briefly or not at all in most botanical books.

Plants can be collected and preserved on the Riviera, in the Alps, or any extra-tropical country, much in the same way as in the British Isles. Specimens are usually put into a japanned or painted tin, commonly called a vasculum; while an ordinary large sponge-bag would in the mountains be found a useful adjunct or alternative, for it can easily be carried in the ruck-sack when on mountain expeditions, and is more convenient than a tin. Sponge-bags are light and fairly waterproof, and for many small fleshy plants, such as Saxifrages and Sempervivums, they are both convenient and handy. Some botanists, however, prefer to take into the field a light portfolio, furnished with leather straps and sheets of drying-paper, so that the plants and particularly the more delicate ones, and those, like Veronicas, whose blossoms drop easily, can be put straight into paper, and sorted and rearranged in a proper press on returning to the house. We do not, however, much recommend the use of such a portable press, especially as it wastes time and is quite useless in wet or windy weather.

Many of the tins carried by young botanists are bought ready-made, and are too short. For ordinary purposes the tin should be about sixteen inches long, seven or eight inches wide, and about two and a half or three inches deep. It should have rounded edges, and the opening, which is on the broad side, should be large enough to admit average specimens without difficulty or needless doubling. The cover to the opening is attached by a couple of hinges, and it fastens at the side by a sliding wire bolt. If this should work loose and there be danger of the lid falling open when carried, the bolt can be bent the least bit out of the straight and it will then hold firmly. The plant-tin is most conveniently carried from the shoulders by a leather strap; but sometimes it has a thick wire handle at the top, which is convenient on occasion. On hot days the vasculum should be kept as much as possible out of the sun, for the metal gets very hot if exposed to brilliant sunshine. To combat this difficulty, or rather to prevent its consequences, the writer often lays the first delicate specimens in a bed of fresh green leaves placed in the tin. If necessary these can be removed as the tin gets too full.

When a sponge-bag is not carried, it is often an advantage to have a smaller tin, such as is sometimes called a sandwich-tin, which will go within the coat-pocket. Small and delicate specimens can thus be carried, or it can be used for wet or dirty roots which might damage delicate flowers in the larger box.

<sup>1</sup> Reprinted, with slight alterations, from the author's "Sub-Alpine Plants," by permission of Messrs. George Routledge & Sons, Ltd.

A perfect specimen should have root, stem, leaves, flowers and fruit—both young and mature if possible. If, as is often the case, the fruit cannot be obtained on the same plant with the flowers, it should be gathered separately from another. It is most important to get the fruit, and in a more or less developed state, for in some families, such as *Cruciferae*, *Leguminosae*, and *Umbelliferae*, it is at times impossible to determine a plant correctly without it. Good typical specimens should be selected, not necessarily the largest, but the most perfect and convenient in size. When possible a root-leaf or two should be collected as well as stem-leaves, but, of course, in many small plants most of the leaves will be root-leaves.

The sheets of paper upon which the specimens are finally mounted should not be less than about 15 × 10 inches, which is the size most cartridge paper cuts into, but 16 × 10 is still better, and this is the size adopted in the Kew Herbarium, and quite large enough for ordinary purposes, though exceeded in several of the other great public herbaria.

When plants are not more than about fifteen inches long it is better to put them into the tin and the press whole—not cut or doubled. When, however, a tall plant or shrub is dealt with, a good flowering branch should be cut off with several of the lower stem-leaves, and the root-leaves, if any, should be added separately, so as to give the complete habit as much as possible.

A notebook should always be taken into the field, in which the names, when known, of all the rarer and more interesting plants should be entered, together with date, habitat, locality, and anything of special interest worth recording. These notebooks form the basis of both the temporary and permanent labels referred to later. When in a foreign country it is sometimes desirable for botanists to enter the names of all the interesting species they come across in their walks, whether they keep dry specimens or not, for such notes are sometimes useful long afterwards, and it is astonishing how quickly such things are forgotten if not noted down.

A press is very simply made from two stout boards, about 16½ × 10½ inches, and of sufficient thickness not to warp. The boards are best with cross-pieces tenoned at the ends, in the manner that drawing-boards are made; and they are either furnished with strong leather straps—screws are not advisable—or the pressure can be obtained by placing glazed bricks, boxes of pebbles, or heavy iron weights on top. Such automatic pressure is best, for it adjusts itself to the diminishing thickness of the contents of the press as the specimens dry. A press of this kind, or a pair of them, can be taken to the Continent without much trouble; but if a few plants only are to be collected, it would suffice to take a couple of pieces of thick mill-board with either leather straps or thinner straps made of a kind of braid, or of the cloth that saddlers use, with buckles attached. Elastic bands are not recommended, for they break easily and cannot be adjusted like straps.

To separate half-dried specimens from fresh ones, and to keep the whole mass fairly level, and generally to hasten the process of drying, we have found a few thin wooden "ventilators" or frames the size of the press, made of cross-pieces of wood half an inch wide and one-eighth inch thick, very useful. Sometimes strong wirework frames or lattices can be bought, which answer the same purpose, or they could be used instead of the wooden boards to form an actual drying-press.

Common blotting-paper should never be used for drying plants in; it is too tender, it does not last, costs too much, and the plants often stick to it. Any

coarse, stout, and unsized paper will do, and even old newspapers may be used as a last resource. It is not necessary to buy the specially made grey, absorbent paper, though as it lasts a lifetime it is not expensive in the end. Such drying-paper is supplied in four sizes by Messrs. West, Newman, & Co., of 54, Hatton Garden, London, at 1s. 1d. per quire or 15s. a ream for the smallest size, which measures 16 x 10 inches when folded. The orthodox paper cannot always be bought when travelling, and in that case it is better to ask the stationer for some of his ordinary rough wrapping-paper. In Italy and France the tough, yellow or grey paper frequently used in grocers' shops will also form quite a good drying-paper.

Before the specimens are placed in the press they should be examined, and any superfluous branches, leaves, or buds removed, if a fairly flat object cannot be otherwise attained. Roots should have soil or sand shaken from them, and they should be washed if necessary, and dried in a duster. The plant is then laid out as naturally as possible on a sheet of drying-paper, and others are placed by it until the sheet is fairly covered. Several sheets of paper should be placed between this lot and the next, according to the nature of the plants and the thickness of the paper; but the great idea in pressing plants is to dry them *quickly*, and thus preserve the colour as naturally as possible. The more paper used and the oftener it is changed and dried the better. At first the papers should be dried every day, in the sun or by the fire; afterwards less often. If the paper is hot, all the better, and a hot iron is often a useful adjunct. The pressure should be light at first, and increased after the first day, but the flowers and delicate leaves of some plants will shrivel if the pressure is not even and adequate. However, many a youthful collector is apt to forget that *drying* is the chief thing, and that the pressure can be easily overdone. At the first changing of papers the specimens can be rearranged while pliable, and superabundant parts removed with scissors. Any stems with broken or ragged ends should also be cut clean. When quite fresh many specimens do not so easily yield to necessary treatment as now.

Generally it is better to leave plants in the tin, rather than put them in water, if it is inconvenient to press them within one or two days; while many small kinds would remain fresh a week in the tin if in a cool place, though both leaves and flowers might lose some colour during that time. Most of the very thick or fleshy portions of plants, such as the head of a Thistle, the bulb of a Daffodil, or the stem of an Orobanche, should be cut in two before being dried. In fact, the whole of a thick Orobanche or of a plant like the common Mullein had better be split in two from top to bottom. Usually both halves are worth preserving. Woody stems also are better split in two, or at any rate thinned.

In order to aid the drying of any such thick or fleshy plants, or portions of plants, it is well to make pads of cotton-wool and place them both above and below the specimens. Cotton-wool can be bought in long sheets and easily cut with scissors the size of the drying-paper. It is better that the plants should not touch the cotton-wool itself; but useful and more or less permanent pads can be made very quickly by loosely stitching together with a needle and thread a pair of folded sheets of drying-paper with the wool inside.

Many succulent plants, such as Orchids, Lilies, Sedums, and Sempervivums can be dried with the help of these pads, but it is best first to dip them in *boiling* water up to the base of the flowers. This kills the plant at once, and enables it to be dried more quickly, and with much less loss of colour. Thick Orchids should always be killed in this way, and their tubers and stems might first be



pricked with the point of a knife to hasten the process of scalding, for the final result, particularly in regard to the green colour of the leaves, makes it well worth the trouble. Dipping in boiling water is also recommended in the case of Heaths, which shed their leaves while being dried.

With the help of the notebook or diary already referred to, it is well to write on a rough, temporary label the name of the plant, if known, the place where it came from, date, and approximate altitude if in the mountains. It is interesting sometimes to add the kind of soil or geological formation. These labels should be placed with the specimens they refer to, and afterwards copied when the plants are mounted. If a series of one species or variety, especially when belonging to a critical genus, be collected, every example should have a little label or ticket with the same number, while one label only need have the full particulars.

When the specimens are quite dry and stiff they can be packed close together, with only a single sheet of paper between each layer, and this paper need not be absorbent, but if it is unglazed the specimens will keep in position better when travelling, and not slip about so readily if the parcel is not quite tight.

In hot countries it is desirable to poison collections of dried plants by painting them over with a solution of mercuric chloride or corrosive sublimate, to protect them against insects. This is done at Kew Herbarium, and also by a few amateur botanists in this country; but in England it is not really necessary, if camphor or naphthaline be freely used, as is the case in the National Herbarium at South Kensington. In addition to spoiling some specimens, and to the subsequent peculiar blackening of the mounting paper in many cases, and to the offensive fumes which in hot weather sometimes rise from specimens treated with corrosive sublimate, the solution is, of course, a most deadly poison, and must be handled with great care.

The preservative solution used at Kew is as follows:—

$\frac{1}{2}$  oz. corrosive sublimate,  
 $\frac{1}{2}$  oz. carbolic acid,  
 1 pint methylated spirit.

It is better that the specimens should be quite dry before they are poisoned. It is usually done with a large camel-hair brush, but there should be no metal mountings about it, and all steel instruments such as knives, scissors, or forceps must be kept away from the solution or it will quickly corrode them. If the solution contains too much chloride of mercury a white crystalline deposit will be left on the specimens. But we say again emphatically that in this country "the game is not worth the candle". If further proof be needed it may be mentioned that the writer has in his own herbarium many hundreds of perfect specimens collected eighty or more years ago which were never "poisoned," but which have suffered nothing from the attacks of insects, and are to-day as complete and in as good condition as ever.

It has been customary in this country to mount dried plants on paper by means of paste, good gum, or liquid glue. When frequently handled this may have its advantages, and especially if little envelopes containing loose portions of the flower and fruit are attached for careful examination or dissection; but many amateur botanists attach their specimens to the paper with narrow strips of gummed paper, so that they can be examined on both sides, and altogether removed if desired. The little rolls of transparent adhesive paper sold by stationers for repairing torn music, books, etc., cannot be improved upon for this purpose. Another method sometimes adopted on the Continent is to attach the



thin portions of stem, etc., to the paper by means of ordinary pins, of course placed horizontally. If gum be used it is best made of a mixture of gum Acacia (gum Arabic) and gum Tragacanth, it being both clean to use and very adhesive. In rare instances collections of plants are not mounted at all, but simply left loose in folded sheets of paper. However, they are better more or less mounted, and the paper should be a thick, white cartridge or some similar paper, which will remain rigid and flat when one end is held in the hand.

After the plants are mounted they should be labelled. The labels should be about  $3\frac{1}{2} \times 2$  inches in size, of rather thin but good white paper so that they can easily be gummed or pasted in a corner of the mount. In British collections it is usual to have the name of the owner neatly printed at the head of the label after the contracted word "Herb." (before which "Ex." can be written when specimens are exchanged or given away). A broad space is then left for the name of the plant, and usually there are lines for the habitat and locality, and half-lines for the Vice-County, collector's name, date, and number in the last edition of the "London Catalogue of British Plants". But for European herbaria a simpler label is usually adopted, with the same simple line border, and either with the heading, "Herbarium Europæum, A.B.C.—," or "Flora of Switzerland," "Plants of Norway," or something of that sort. It saves time when many specimens have been collected by the same person to have the collector's name, preceded by "Coll." or "Legit," printed in small type at the base of the label.

It should have been mentioned that in mounting many specimens which do not fill a sheet, it is important not to place them always in the centre, but rather at one side if narrow, or in one corner if very small. This will not only tend to keep the bundles of sheets fairly level, but allow several examples of the same species from other districts or from other countries to be added later. The label should, of course, be placed near the plant, and it is sometimes well to rule off with a pencil line one specimen from another from a different district. In this way it is quite easy to have four or five gatherings of the smallest plants with different labels mounted on the same sheet. In starting a continental collection young botanists are tempted to economize in paper and space by mounting different species on the same sheet. This is greatly to be discouraged, for, apart from the want of systematic order, the space may be needed on future occasions for plants of the same species or variety.

As previously suggested, it is an excellent plan to have a series of very small envelopes, which can be home-made, in which to keep seeds, fruits, and sometimes individual specimens of the flowers or even some leaves, so that they can be easily examined either with an ordinary pocket-lens or under the microscope. Such envelopes should be gummed at the back to the sheet of mounting-paper, preferably with the name of the plant and its collection number, if any. These field numbers are quoted, and save much trouble and needless explanation in the event of any subsequent correspondence on the specimens they refer to. In collecting obscure forms and little-known varieties and all plants such as Hawk-weeds, Willows, Roses, Sedges, etc., in any quantity, all of one gathering should bear the same numeral. This is particularly the custom with collectors of sets of rare plants in new or little-known countries, and these numbers are referred to and quoted afterwards in books written on the flora of those countries. In working at any special genus or at the plants of one country, whether it be at Petersburg, Vienna, London, or New York, it is a great help to find a collector's specimens all uniformly numbered thus.

The arrangement of the specimens in genus covers, and of the herbarium generally in a cabinet, must depend upon the individual taste of the botanist and upon the size of his collection. But except in very small collections when several genera can be placed together in one cover, with their names and those of the various genera neatly written outside, it is better to place the species of one genus only in a cover. These genus covers should be made of stout brown paper folded to a slightly larger size than the mounting-paper. The name of the genus should be written on the end of the cover so that it can be readily found when packed in the cabinet. As the collection grows it may be necessary to have more than one cover for many of the larger genera.

Cabinets should be made of well-seasoned wood—what is called American white-wood is a very good and inexpensive material. The usual form is a tall, upright cupboard, divided perpendicularly into two equal parts, and with two closely fitting doors opening in the middle (two doors are very much better than one). The shelves should be made very carefully of thin wood which will not warp, and they should slide easily in shallow grooves cut in the framework of the cupboard. They are better supported in this way than on narrow strips of wood nailed to the sides, for such strips interfere with the papers when the shelves are very full.

It is to be hoped that not only collectors of herbarium specimens and of roots, but all who gather flowers will set a good example by not taking more than they really need.

## A SHORT GLOSSARY OF BOTANICAL TERMS.

- ACHENE**, a dry, indehiscent, 1-seeded fruit, such as the single "seed" of a *Ranunculus*.
- ACICULAR**, applied to linear leaves which are stiff and needle-like, such as those of Pine.
- ACUMINATE**, narrowed at the top and then prolonged into a point.
- ACUTE**, tapering to a point; sharp.
- ADHESION**, the union of dissimilar parts of a flower, such as the petals and sepals; cf. Cohesion.
- ADNATE**, attached throughout their whole length.
- ADRESSED**, pressed close to anything.
- ADVENTITIOUS ROOTS**, those which appear as outgrowths from the stem or leaves.
- ÆSTIVATION**, the arrangement of the petals in the unexpanded bud.
- ALBUMEN**, nutritious matter in the seed to feed the young plant.
- ALTERNATE**, applied to leaves which are not arranged opposite to one another on the stem.
- AMPLEXICAUL**, when a leaf, bract, or stipule more or less embraces the stem.
- ANASTOMISING**, veins combining with each other at their ends.
- ANDRÆCIUM**, the male organs or stamens, considered as a whole.
- ANGIOSPERM**, a Flowering Plant whose ovules are enclosed in ovaries; cf. Gymnosperm.
- ANNUAL**, applied to plants which pass through their life-history in one year and then die.
- ANTHER**, the upper portion of a stamen containing pollen.
- APETALOUS**, without petals, or with very small rudimentary ones.
- APEX**, the end furthest from the point of attachment.
- APICULATE**, with a very small hard point at the end, often formed by the tip of the midrib.
- AQUATIC**, growing actually in water.
- ARILLUS**, a fleshy covering of some seeds.
- ARISTATE**, when the point of a leaf is fine like a hair.
- ARTICULATE**, jointed, applied to organs which can be separated (without tearing) into several similar parts, e.g. an articulated capsule.
- ASCENDING**, applied to stems which are first prostrate and then rise more or less vertically.
- ASEXUAL**, applied to the reproduction by organs other than the stamens and carpels.
- ASSOCIATION**, a colony or community of plants living together.
- AURICLES**, appendages at the base of the leaves.
- AWN**, a thread-like extension of a seed or other organ, such as in Barley.
- AXIL**, the angle formed, for example, at the attachment of a leaf to a stem.
- AXILLARY**, placed in an axil.
- AXIS**, usually applied to the stem.
- BEAK**, sometimes applied to the curved and pointed extremity of a fruit; or the hooded portion of a corolla.
- BERRY**, a pulpy fruit containing several seeds.
- BIENNIAL**, requiring two years to complete its life-history, after which the plant dies.



BIFID, 2-cleft.

BIPINNATE, twice-pinnate ; i.e. when the divisions of a pinnate leaf are themselves pinnate ; e.g. the leaflets of *Osmunda*.

BIPINNATIFID, applied to pinnate leaves whose segments are doubly cut or lobed ; e.g. *Matricaria*.

BITERNATE, when the divisions of a ternate leaf are themselves ternate.

BRACT, a small leaf at the base of a flower-stalk ; or the divisions of an involucre.

BRACTEOLE, the last minute bracts under each flower.

BUD, the unopened leaf or flower.

BULB, a modified stem, usually subterranean, consisting of a series of succulent leaves, containing reserve material, such as an onion.

BULBIL, a bud which falls from certain flowers or leaves and is capable of reproducing the plant, as in some *Alliums* and *Lilies*.

CÆSPITOSE, growing in tufts from the roots.

CALCICOLE, applied to plants which thrive best on calcareous, or limestone, soils.

CALCIFUGE, applied to plants which avoid calcareous soils.

CALYX, the sepals considered as a whole.

CAMPANULATE, in the form of a bell.

CAPILLARY, hair-like ; very fine, but hollow.

CAPITATE, growing in heads or close clusters.

CAPITULUM or HEAD, an inflorescence in which the flowers are stemless, and arranged on a terminal expansion of the axis ; e.g. many *Compositæ*.

CAPSULE, a dry seed-vessel containing many seeds and composed of two or more carpels.

CARPEL, the divisions of the ovary or capsule.

CARPOPHORE, a small support to the capsules of certain plants, as in many *Silenes*.

CARTILAGINOUS, of the consistence and colour of cartilage ; e.g. the border of many *Saxifrage* leaves.

CATKIN, a dense spike of unisexual apetalous flowers, which are shed as a whole.

CAULINE, growing from the stem, not radical.

CELLS, the units of which plant or animal tissue is built up.

CELLULAR, composed of cells.

CHLOROPHYLL, the green colouring-matter of plants.

CILIATE, fringed with longish hairs or cilia.

CIRCINATE, curled up from the top towards the base.

CLAVATE, club-shaped.

CLAW, the narrowed base of a petal.

CLEISTOGAMOUS flowers are those which never open and are self-fertilised.

CLUB-SHAPED, cylindrical, but becoming larger towards the apex.

COHESION, the union of similar parts of a flower ; cf. ADHESION.

COMPRESSED, flattened laterally.

CONE, the scaly fruit of the *Coniferae* or Pine family.

CONICAL, cone-shaped.

CONIFEROUS, applied to the Pine and Fir family, which bear cones.

CONNATE, when two similar parts, as leaves, are slightly connected round the stem.

CONNIVENT, converging.

CONVOLUTE, rolled together.

CORDATE, heart-shaped ; ovate, acute with two rounded lobes at the base.

CORIACEOUS, firm and tough like leather.

CORM, a bulb-shaped, modified and swollen underground stem, in which reserve material is stored ; e.g. a *Crocus* corm.

COROLLA, the petals of a flower considered as a whole.

CORONA, a circular rim within the corolla or perianth, such as the "trumpet" of a *Daffodil*.



**CORYMB**, a raceme with the peduncles becoming gradually shorter as they approach the top, so that all the flowers are about on a level.

**COTYLEDONS**, the first pair of seed-leaves.

**CRENATE**, applied to leaves with obtuse, rounded teeth, such as those of Violet and Ground Ivy.

**CRENULATE**, minutely crenate.

**CRYPTOGAMIC**, plants reproduced by spores, like Ferns and Mosses, in which the stamens and pistils are wanting.

**CUNATE** or **CUNEIFORM**, wedge-shaped; i.e. broadest above the middle and tapering toward the base.

**CUSPIDATE**, imperceptibly lengthened into a sharp point.

**CUTICLE**, the outer skin of an animal or plant.

**CYME**, an inflorescence in which the flowers are produced in successive, lateral axis; e.g. *Myosotis*, *Lychnis*.

**CYLINDRICAL**, more or less in the form of a cylinder.

**DECIDUOUS**, applied to plants, and especially trees, whose leaves are shed each autumn.

**DECURRENT**, applied to leaves which run down the stem.

**DEHISCENT**, applied to fruits which open at one or more points to allow the seed to escape.

**DENTATE**, with short triangular teeth.

**DENTICULATE**, finely dentate.

**DICHOTOMOUS**, applied to a stem, branch, panicle, or cyme which is forked again and again.

**DICOTYLEDON**, a plant having two seed-leaves; cf. Monocotyledon.

**DIFFUSE**, widely spreading.

**DIGITATE** leaves are those whose lobes are disposed like the fingers of the hand, but from one centre, as in Lupine.

**DIÆCIOUS** plants are those having stamens and pistils in separate flowers on different plants.

**DISC** or **DISK**, the central part of a capitulum of *Compositæ*; also the glandular space above the receptacle of some flowers.

**DIVARICATE**, spreading at an obtuse angle.

**DRUPE**, a fleshy, indehiscent fruit containing a stone in which the seed is enclosed; e.g. a cherry.

**EBRACTEATE**, without bracts.

**ECOLOGY**, the study of plants in relation to their environment.

**ELLIPTICAL**, in the form of an oval with both ends tapering alike.

**EMARGINATE**, notched; usually applied to petals.

**ENDEMIC**, peculiar to a district or country.

**ENDOSPERM**, the store of food outside the embryo in certain seeds, and absorbed by it in germination.

**ENTIRE**, applied to leaves which are not cut or toothed.

**EPICALYX**, the outer portion of a double calyx; e.g. in *Potentilla*.

**EPIGYNOUS**, apparently seated upon the ovary.

**EPIPETALOUS**, applied to stamens borne upon petals.

**EPIPHYTE**, a plant which grows upon another, but not as a parasite. Lichens and many Orchids are epiphytes.

**EQUALLING**, when the ends of organs rise to the same height though their relative lengths may be different.

**EVERGREEN**, applied to plants with green foliage all the year, and to leaves which last more than one season.

**EXALBUMINOUS** seeds have no endosperm, and the embryo occupies the whole cavity.

**EXsertED**, projecting beyond that which surrounds its base.

**EXstIPULATE**, having no stipules.

**FALCATE**, sickle-shaped.

**FAMILY** = Natural Order; a group of genera of greater or less affinity.

- FASCICLED, or fasciculate, in bundles or tufts.
- FELTED, tomentose.
- FILAMENT, the slender stalk of a stamen.
- FILIFORM, long and slender or thread-like.
- FISTULAR, cylindrical and hollow, like many umbelliferous stems.
- FLACCID, limp or weak.
- FLEXUOSE, bent more or less in a zigzag.
- FLOCCOSE, with little tufts like wool.
- FOLLICLE, a carpel or seed capsule dehiscing longitudinally at the inner suture ;  
e.g. Hellebore, Pæony.
- FREE, not united.
- FRUIT, the seed or group of seeds with its whole covering.
- FRUTICOSE, shrubby.
- FUGACIOUS, soon falling off.
- FUSIFORM, spindle-shaped, thick, tapering to each end.
- GALL, a growth caused by an insect or fungus ; e.g. an " Oak apple ".
- GAMOPETALOUS flowers have the petals all united, as opposed to polypetalous.
- GENUS (plural genera), a group of species of greater or less affinity.
- GERMEN, the ovary.
- GIBBOUS, swollen at the side.
- GLABROUS, without hairs.
- GLAND, an organ of secretion.
- GLANDULAR HAIRS are those with enlarged apices containing a secretion, as in  
*Drosera* or *Inula viscosa*.
- GLAUCOUS, covered with a pale bluish-green bloom.
- GLOBOSE, spherical.
- GLUME, the scale or bract which encloses the spikelet in Grasses and Sedges.
- GLUMELLA or GLUMULE, the bract which forms the exterior covering of each  
flower of a spikelet in Grasses.
- GRANULAR, covered with minute projecting points.
- GYMNOSPERM, a flowering plant whose ovules are not enclosed in carpels. The  
*Coniferae* are the chief Gymnosperms.
- GYNÆCIUM, the carpels or female organs of a flower considered as a whole.
- HABIT, the outward form, shape, or build of a plant.
- HABITAT, the kind of locality in which a plant grows. Not the locality itself,  
which may be called a station.
- HASTATE, halbert-shaped, enlarged at base into two lobes directed nearly  
horizontally.
- HERBACEOUS, not woody.
- HERMAPHRODITE, or bisexual flowers, have both stamens and pistils present.
- HISPID, bristly, thickly covered with stiff hairs.
- HOARY, with greyish-white down.
- HONEY, the nectar secreted by many flowers to attract insects.
- HUMUS, organic matter in the soil, more or less decomposed.
- HYBRID, a cross between two species.
- HYPOGYNOUS flowers have the calyx and corolla borne on the receptacle, and the  
ovary is superior.
- IMBRICATE, overlapping like the tiles of a roof, such as the leaves of *Gentiana*  
*imbricata*, or involucrel bracts of a *Centaurea*.
- IMPARIPINNATE, pinnate with a single terminal leaflet.
- INCISE, deeply cut.
- INDEHISCENT fruits are those which do not open to allow the seed to escape.
- INDIGENOUS, native, not introduced.
- INFERIOR, applied to the ovaries of flowers whose calyx-tube encloses the ovary ;  
cf. Superior.
- INFLORESCENCE, the manner in which flowers are arranged on the main stem or  
on lateral branches.

- INSECTIVOROUS** plants are those which absorb nutriment from flies and other insects.
- INTERNODE**, the portion of a stem between the attachment of two alternate leaves.
- INVOLUCEL**, the involucre of a partial umbel.
- INVOLUCRE**, the whorl of bracts below an inflorescence or below a single flower.
- INVOLUTE**, rolled from the back of anything, as towards the upper side of a leaf.
- IRREGULAR**, unequally divided.
- KEEL**, the two lower united petals of Leguminous flowers; keeled is also applied as an adjective to certain leaves.
- LABELLUM** or **LABEL**, the lower lip of Orchids, Labiates, etc.
- LACINIATE**, when leaf-lobes are narrow and very irregular.
- LAMINA**, the blade or broad part of a leaf.
- LANCEOLATE**, tapering at both ends, but more so at the upper end; a somewhat comprehensive term applied to leaves, etc., which are about three or more times as long as broad.
- LEAFLETS**, the subdivisions of compound leaves.
- LEGUME**, a one-celled and two-valved seed-vessel with the seeds along the inner angle, as a Pea-pod.
- LIGULATE**, strap-shaped; not very narrow nor long.
- LIGULE**, a small membranous bract embracing the stem of grasses and forming part of the sheath.
- LIMB**, the broader part of a petal or leaf.
- LINEAR**, very narrow and long, and with parallel edges.
- LOBES**, the division, of a leaf, calyx, or corolla in a broad sense.
- LYRATE**, applied to a pinnatifid leaf with a rounded terminal lobe and smaller divisions towards the base, as in *Geum silvaticum*.
- MEMBRANOUS**, thin and transparent like a membrane.
- MIDRIB**, the principal vein of a leaf.
- MONOCOTYLEDON**, a plant having only one seed-leaf. Grasses, Sedges, Lilies, and many bulbous and tuberous plants are Monocotyledons.
- MONŒCIOUS** plants are those which have the stamens and pistil in separate flowers, but on the same plant.
- MUCRONATE**, suddenly terminated by a short and stiff point or needle, called a *micro*. In leaves it is the prolongation of the midrib.
- MULTIFID**, divided into many parts.
- NATURALISED**, of foreign origin, but established and growing naturally in a country.
- NECTARY**, an organ secreting nectar or honey.
- NITROGENOUS**, containing nitrogen.
- NODE**, the point of insertion of a leaf on a stem.
- NUT**, a dry fruit with a hard, woody shell or pericarp.
- OB**, in conjunction with terms means inverted, e.g. obovate.
- OBCORDATE**, inversely heart-shaped.
- OBLONG**, long, oval, equally broad at each end.
- OBOVATE**, inversely egg-shaped, with the attachment at the narrow end.
- OBTUSE**, more or less rounded at the top.
- OFFSET**, the bud at the end of a runner or stolon.
- OPPOSITE**, applied to leaves which are in pairs at the same level on the stem, cf. Alternate,
- ORBICULAR**, round, spherical.
- OVARY**, a carpel enclosing one or more ovules.
- OVATE**, egg-shaped.
- OVULE**, the embryo seed enclosed in the ovary.



**PALATE**, part of the base of the lower lip which closes the mouth of a ringent corolla.

**PALEACEOUS**, chaffy.

**PALEÆ**, or **CHAFF**, the inner bracts or scales in *Compositæ*, *Gramineæ*, etc.

**PALMATE**, divided like a hand into several lobes.

**PANICLE**, a branched raceme.

**PAPILIONACEOUS**, like the flower of a Pea.

**PAPILLÆ**, small elongated protuberances.

**PAPPUS**, a feathery appendage of the seed of many *Compositæ*.

**PARASITE**, a plant living on or in another (the host) from which it derives part of its food; e.g. *Orobanche*. Semi-parasites include such plants as *Rhinanthus*, *Euphrasia*, etc.

**PARIETAL**, on the inner surface of an ovary.

**PATENT**, spreading, open.

**PECTINATE**, finely divided like the teeth of a comb.

**PEDICEL**, the stalk of a flower in a compound inflorescence.

**PEDUNCLE**, the stalk of an inflorescence, or of a solitary flower.

**PELTATE**, applied to leaves which are more or less round, with the stalk on the face, not at the edge, e.g. *Hydrocotyle*.

**PERENNIAL**, lasting more than two years.

**PERFOLIATE**, when the stem passes through a pair of leaves, as in *Chlora perfoliata*.

**PERIANTH**, the floral envelope replacing the calyx and corolla in the Monoclamydeæ and Monocotyledons; e.g. the flower of a Crocus.

**PERICARP**, the wall of the developed ovary as seen in the fruit.

**PERIGYNOUS**, when the corolla and stamens are borne on the calyx but free from the ovary.

**PERSISTENT**, not soon falling off.

**PETAL**, a unit of the corolla.

**PETALOID**, in the colour or form of a petal.

**PETIOLATE**, having a leaf-stalk or petiole.

**PETIOLE**, a leaf-stalk.

**PHANEROGAM**, a flowering plant.

**PILOSE**, sparsely covered with rather long hairs.

**PINNATE**, when several segments succeed each other on each side of a stalk.

**PINNÆ**, the segments of a pinnate leaf.

**PINNATIFID**, pinnately cleft.

**PINNATISECT**, pinnately divided down to the rachis.

**PISTIL**, the portion of the flower comprising the ovary, style, and stigma.

**PITH**, a column of cellular tissue in the centre of the stem of many plants.

**PITTED**, covered with small depressed spots.

**PLACENTA**, the portion of the ovary to which the ovules are attached.

**PLUMULE**, the ascending leafy part of the embryo.

**POD**, a one-celled and two-valved seed-vessel with the seeds along the inner angle.

**POLLEN**, fertilising powder contained in the anthers.

**POLLINATION**, the act of dusting the stigma with pollen.

**POLLINIUM**, the pollen-mass of an Orchid.

**POLYGAMOUS**, bearing hermaphrodite and unisexual flowers at the same time.

**POLYMORPHIC**, variable in shape or form.

**POLYPETALOUS**, flowers having many separate petals.

**PREMORSE**, bitten off.

**PRICKLE**, a sharply-pointed but not woody excrescence on a branch or leaf, etc.

**PTERIDOPHYTES**, Fern plants.

**PUBERULENT**, feebly pubescent.

**PUBESCENT**, downy, furnished with fine, soft, short hairs.

**PULVERULENT**, covered with fine powdery matter.

**RACEME**, an inflorescence in which stalked flowers are borne on a central stem, the lowest flowers opening first.



- RACHILLA, a secondary axis in the inflorescence of grasses.  
RACHIS, the stalk of a compound leaf; the primary axis of certain kinds of inflorescence.  
RADICAL, springing from the root.  
RADICLE, the embryo root.  
RAY FLORETS, the outer flowers of the *Compositæ*; cf. Disk Florets.  
RECEPTACLE, the top portion of the axis of a flower which bears the floral envelope and the male and female organs; also the axis bearing the florets in *Compositæ*.  
RECURVED, bent back moderately.  
REFLEXED, bent back considerably.  
REGULAR, divided equally.  
RENIFORM, kidney-shaped or bean-shaped.  
RETICULATED, like a network.  
RETORSE, directed backward or downward.  
RETUSE, very obtuse or truncate and slightly indented.  
REVOLUTE, rolled back, as towards the underside of a leaf.  
RHIZOME, a creeping, prostrate underground stem, bearing erect or sometimes prostrate shoots.  
RHOMBOIDAL, approaching a quadrangular, not square.  
RINGENT, strongly 2-lipped and gaping.  
ROOT-STOCK, a thick short rhizome; or the crown of the root.  
ROSETTE, a somewhat circular group of leaves arranged in a close and spreading manner, often flat on the ground.  
ROSTRATE, beaked.  
ROTATE, a monopetalous corolla with short tube and very spreading limb.  
RUGOSE, wrinkled.  
RUNCINATE, pinnatifid, with the lobes pointing backwards; e.g. a Dandelion leaf.  
RUNNER, a slender, prostrate, and generally rooting stem-branch.
- SAGITTATE, arrow-shaped, the auricles or lobes pointing backwards.  
SCABROUS, rough to the touch.  
SCALE, a thin, disk-like growth on the exposed surface of some leaves and stems.  
SCAPE, a naked flower stem springing direct from the root and bearing a single flower.  
SCARIOUS, thin and more or less transparent and not green, but scaly and dry.  
SECUND, all turned towards one side.  
SEED, a fertilised ovule.  
SEPAL, one of the divisions of the calyx.  
SERRATE, edged like a saw.  
SERRULATE, with very small saw-like teeth.  
SESSILE, stemless.  
SETA, a bristle, or a slender straight prickle.  
SETACEOUS, like a bristle.  
SHEATH, the lower part of a leaf or its petiole, which forms a sort of tube surrounding the stem.  
SHRUB, a woody perennial plant without a main trunk.  
SILICULE, a short seed-pod in Cruciferous plants, such as *Draba*; adj. Siliculose.  
SILIQUEA, a linear seed-pod in Cruciferous plants, such as Wallflower; adj. Siliquose.  
SINUOUS or SINUATE, wavy; when teeth on the margin of a leaf are broad and irregular lobes or notches.  
SPADIX, a fleshy spike, as in *Arum maculatum*.  
SPATHE, a sheath-like leaf enveloping a flower, as in *Arum*.  
SPATHULATE, broadened in the short upper half and narrowly contracted below.  
SPECIES, a unit of a genus of greater or less affinity.  
SPERMATOPHYTES, seed-plants.  
SPIKE, a simple inflorescence of sessile flowers attached to a simple axis.

**SPIKELET**, the small cluster of flowers in grasses enclosed within one or more glumes.

**SPINE**, a stiff, sharp, woody, persistent thorn.

**SPORES**, the powdery grains of Mosses, Ferns, etc., which correspond to the "seeds" in flowering plants.

**SPUR**, a prolonged portion of a flower, usually somewhat tubular.

**STAMEN**, the male organ of a flower considered as a whole.

**STANDARD**, the large upper petal of a Leguminous flower.

**STELLATE**, star-shaped; often applied to certain hairs, radiating from a centre.

**STERILE**, having stamens, but no pistils; barren.

**STIGMA**, the receptive upper portion of a pistil, where the pollen is dusted. The adj. stigmatic means sticky (applied to the disk).

**STIPULATE**, possessing stipules.

**STIPULES**, leaf-like appendages, often in pairs and winged at the junction of leaves with the stem.

**STOLON**, a horizontal runner or stem-branch. Adj. Stoloniferous.

**STOMATA**, the minute pores in the epidermis of a leaf, especially on the underside; sing. STOMA.

**STRAP-SHAPED**, not very narrow nor long, but with nearly parallel sides.

**STRÆ**, very slight furrows or ridges.

**STRIATE**, marked with parallel longitudinal lines or furrows.

**STYLE**, the central portion of the pistil which bears the stigma.

**SUB** in composition means a near approach to.

**SUBULATE**, awl-shaped.

**SUCKER**, a stem produced at the end of an underground shoot.

**SUPERIOR**, applied to an ovary which is free from and not enclosed by the floral envelope.

**SUTURE**, the line of junction of similar organs cohering.

**SYNCARPOUS**, fruit composed of cohering carpels.

**TAP-ROOT**, the main descending root.

**TEETH**, small pointed lobes on the margins of leaves, etc.

**TENDRIL**, a thread-like organ used for climbing.

**TERETE**, long and cylindrical, with a nearly round transverse section.

**TERNATE**, in threes.

**TESTA**, the outer coat of seeds.

**TETRAGONOUS**, with four angles and four convex faces.

**THALAMUS**, the receptacle.

**THALLUS**, a vegetative body not differentiated into stem and leaf.

**THORN**, a sharply pointed extremity of a branch or stalk having a woody centre; a spine.

**THROAT**, the upper part of a corolla-tube.

**THYRSOID**, applied to a narrow, pyramidal panicle of cymes which are usually opposite.

**TOMENTOSE**, covered with tomentum, or dense, white hair.

**TOMENTUM**, a thick coating of short, cottony hairs, usually whitish or grey; e.g. *Cineraria maritima*, *Medicago marina*.

**TORULOSE**, uneven, alternately elevated and depressed like a knotted cord.

**TRANSPIRATION**, the act of giving off water from the leaves of a plant, through the stomata.

**TRICHOTOMOUS**, in forks of three prongs.

**TRIFID**, 3-cleft, about half way down.

**TRIGONOUS**, with three angles and three convex faces.

**TRIQUETROUS**, with three angles and three concave faces.

**TRUNCATE**, ending abruptly, as if cut off square.

**TUBER**, a short, thick underground stem containing food material, such as an Artichoke.

**TUBERCLES**, little round knobs.

**TUBERCULATE**, covered with small obtuse, wart-like excrescences.

**TURBINATE**, top-shaped.

UMBEL, an inflorescence in which the flower-stalks radiate from a common point and are nearly of the same length ; e.g. Carrot.

UNCINATE, hooked.

UNILATERAL, turned to one side.

UNISEXUAL FLOWERS are those which contain either male or female organs, but not both.

URCEOLATE, pitcher-shaped, or urn-shaped, contracted at the mouth.

UTRICLE, the envelope of the nut of a *Carex* ; an achene with a membranous pericarp.

VALVATE, having *valves* or parts of an organ opening like little doors ; or organs touching only along their edges.

VASCULAR, built up of vessels.

VENTRICOSE, swelling on one side.

VERMICULAR or VERMIFORM, worm-like.

VERNATION, the state of leaves in bud.

VERRUCOSE, warty.

VERSATILE anthers are those which are balanced on the filament.

VERTICILLATE, whorled.

VESICLE, a bladder.

VILLOUS, or VILLOSE, shaggy.

VISCOUS, sticky, clammy.

VITTÆ, linear receptacles of oil in the fruits of Umbellifers ; stripes.

VIVIPAROUS, applied to the production of young plants (not seeds) attached to the parent plant.

WEDGE-SHAPED, like a wedge but attached by its point.

WHORL, three or more leaves or flowers arranged around the stem on the same level ; e.g. *Galium*.

WING, a prolongation of a fruit or seed or of a stem ; the side petal of a Leguminous flower.

WOOLLY, when the hairs are long and loose, like wool.

When two terms are combined, as ovate-lanceolate, it means that the form is compounded of the two, or lies between them.

OB in conjunction with terms means inverted, as obovate.

SUB in composition means a near approach to, as sub-Alpine, sub-erect.

*Tricuspid*, an inflorescence in which the floral parts radiate from a common point and are nearly of the same length. (See *Carina*.)

*Tricostate*, hooded.  
*Tricostate*, hooded (see *ella*).  
*Tricostate*, flowers are those which contain eight stamens or more, but not self.

*Trilocular*, divided into three or four nearly rounded lobes at the mouth.  
*Trilocular*, the envelope of the ovary is divided into three or four nearly rounded lobes with a membranous pericarp.

*Trilocular*, having three or four of an organ opening into the lobes; or organ opening only along their edges.

*Trilocular*, both in its lobes.

*Trilocular*, woody on one side.

*Trilocular*, the wood is formed in 3 or 4.

*Trilocular*, woody.

*Trilocular*, woody on those which are joined to the flower.

*Trilocular*, woody.

*Trilocular*, a bud-like.

*Trilocular*, or *Trilocular*, woody.

*Trilocular*, woody, channel.

*Trilocular*, the receptacle of oil in the form of 3 distinct masses.

*Trilocular*, applied to the formation of young plants that require attention in the nursery.

*Trilocular*, the wood is formed in 3 or 4.

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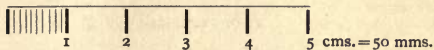
## ABBREVIATIONS OF AUTHORS' NAMES.

- |  |  |
|--|--|
| <p>A. Br. = Alexander Braun<br/>         Adans. = Adanson<br/>         A. DC. = Alphonse de Candolle<br/>         Ait. = Aiton<br/>         All. = Allioni<br/>         Anders. = Anderson<br/>         Anderss. = Andersson<br/>         Ard. = Ardoino<br/>         A. T. or Arv. T. = Arvet-Touvet<br/>         Asch. = Ascherson<br/>         A. et Graeb. = Ascherson et Graebner<br/>         Bab. = Babington<br/>         Bad. = Badarro<br/>         Balb. = Balbis<br/>         Bart. or Bartl. = Bartling<br/>         Bast. = Bastard<br/>         Batt. et Trabb. = Battandier et Trabut<br/>         Baumg. = Baungarten<br/>         Bell. = Bellardi<br/>         Benth. = Bentham<br/>         Berg. = Bergeret<br/>         Bernh. = Bernhardt<br/>         Bert. = Bertolini<br/>         Bess. = Besser<br/>         Bieb. = Marschall von Bieberstein<br/>         Boiss. = Boissier<br/>         Boiss. et Reut. = Boissier et Reuter<br/>         Bor. = Boreau<br/>         Briq. = Briquet<br/>         Brot. = Brotero<br/>         R. Br. = Robert Brown<br/>         Burn. = Burnat<br/>         Burn. et Grem. = Burnat et Gremli<br/>         Cass. = Cassini<br/>         Chab. = Chabert<br/>         Clairv. = Clairville<br/>         Chev. = Chevallier<br/>         Clus. = Clusius<br/>         Coss. et G. = Cosson et Germain<br/>         Crép. = Crépin<br/>         Curt. = Curtis<br/>         Cuss. = Cusson<br/>         Cyr. = Cyrillo<br/>         DC. = de Candolle (A.P.)<br/>         Degl. = Degland<br/>         De Not. = De Notaris<br/>         Desf. = Desfontaines<br/>         Desr. = Desrousseaux<br/>         Desv. = Desvaux</p> | <p>Dum. = Dumortier<br/>         Dun. = Dunal<br/>         Ehrh. = Ehrhart<br/>         Endl. = Endlicher<br/>         Engel. = Engelmann<br/>         Fenz. = Fenzl<br/>         Fisch. = Fischer<br/>         Forsk. = Forskal<br/>         Fouc. = Foucaud<br/>         Fouc. et R. = Foucaud et Rouy<br/>         Fr. = Fries<br/>         Froel. = Froelich<br/>         Gaertn. = Gaertner<br/>         Gaud. = Gaudin<br/>         Gaut. = G. Gautier<br/>         Genev. = Genevier<br/>         G. G. or Gren. et Godr. = Grenier et Godron<br/>         Gilib. = Gilibert<br/>         Gmel. = Gmelin<br/>         Godr. = Godron<br/>         Good. = Goodenough<br/>         Gren. = Grenier<br/>         Griseb. = Grisebach<br/>         Guss. = Gussone<br/>         Hack. = Hackel<br/>         Hall. = Haller<br/>         Hartm. = Hartmann<br/>         Hausm. = Hausmann<br/>         Heg. = Hegetschweiler<br/>         Heldr. = Heldreich (de)<br/>         Heynh. = Heynhold<br/>         Hoff. or Hoffm. = Hoffmann<br/>         Hoffm. et Lk. = Hoffmannsegg et Link.<br/>         Hook. = Hooker<br/>         Huds. = Hudson<br/>         Huss. = Hussenot<br/>         Jacq. = Jacquin<br/>         Jord. = Jordan<br/>         Juss. = Jussieu (A. L. de)<br/>         K. = Koch<br/>         Kalt. = Kaltenbach<br/>         Kern. = Kerner<br/>         Kit. = Kitaibel<br/>         K. et S. = Koch et Sonder<br/>         Kütz. = Kützing<br/>         L. or Linn. = Linnæus (Linné)<br/>         L. fil. = Linné fils<br/>         Lach. = Lachenal</p> |
|--|--|

Lag. = Lagasca  
 Lagg. = Lagger  
 Lam. or Lamk. = Lamarck (de)  
 Lamb. = Lambert  
 Lapeyr. = Lapeyrouse  
 Lej. = Lejeune  
 Less. = Lessing  
 Leyss. = Leysser  
 L'Hérit. = L'Héritier  
 Lightf. = Lightfoot  
 Lindl. = Lindley  
 Lk. = Link  
 Loeffl. = Loefling  
 Lois. or Loisel. = Loiseleur  
 M. B. or M. Bieb. = Marschall von  
   Bieberstein  
 Medic. = Medicus  
 Merc. = Mercier  
 C. A. Mey. = Carl Anton Meyer  
 E. Mey. = Ernst Meyer  
 Michx. = Michaux  
 Mich. = Micheli  
 Mill. = Miller  
 P. J. M. = P. J. Müller  
 Mert. et K. = Mertens et Koch  
 M. et K. = Mertens et Koch  
 Mor. = Moretti  
 Murr. = Murray  
 Neck. = Necker  
 Not. = Notaris (de)  
 Nym. = Nyman  
 Panz. = Panzer  
 Parl. = Parlatore  
 P. Br. = Patrick Browne  
 P. B. or P. Beauv. = Palisot de Beau-  
   vois  
 Perr. et Song. = Perrier et Songer  
 Pers. = Persoon  
 Peterm. = Petermann  
 Poir. = Poirét  
 Poll. = Pollich  
 Pourr. = Pourret  
 R. Br. = Robert Brown.  
 Rchb. or Reichb. = Reichenbach  
 Req. = Requien  
 Retz. = Retzius  
 Reut. = Reuter  
 Reyn. = Reynier  
 Rich. = Richard  
 Rothb. = Rottboell

R. et Fouc. = Rouy et Foucaud  
 R. et S. = Roemer et Schultes  
 Salisb. = Salisbury  
 Schimp. = Schimper  
 F. Schulz. = Friedr. Schultz  
 Schk. = Schkuhr  
 Schleich. = Schleicher  
 Schleid. = Schleider  
 Schult. = Schultz  
 Scop. = Scopoli  
 Seb. et Maur. = Sebastiani et Mauri  
 Ser. = Seringe  
 Shuttle. = Shuttleworth  
 Sibth. = Sibthorp  
 Sieb. = Sieber  
 Sm. = Smith  
 Spr. or Spreng. = Sprengel  
 Steph. = Stephani  
 Sternbg. = Sternberg  
 Steud. = Steudel  
 Stev. = Steven  
 Sw. = Swartz  
 Ten. = Tenore  
 Thom. = Thomas  
 Thuill. = Thuiller  
 Thunbg. = Thunberg  
 Tim. = Timbal-Lagrange  
 Tin. = Tineo  
 Tourn. = Tournefort  
 Trin. = Trinius  
 Urv. = d'Urville  
 Vail. = Vaillant  
 Vauch. = Vaucher  
 Vig. = Viguiér  
 Vill. = Villars  
 Vis. = Visiani  
 Viv. = Viviani  
 Wahl. or Wahlen. = Wahlenberg  
 Wallr. = Wallroth  
 Weigl. = Weigel  
 Wettst. = de Wettstein  
 Willd. = Willdenow  
 Willk. = Willkomm  
 Willk. et Lge. = Willkomme et Lange  
 W. et K., W. et Kit., Waldst. et Kit. =  
   Waldstein et Kitaibel  
 W. et N. = Weihe et Nees  
 With. = Withering  
 Wulf. = Wulfen

SCALE OF MEASUREMENT.



1 Metre = 3·281 English feet  
 10 Centimetres = 4 inches (almost)  
 30       "       = 1 foot  
 2·5 cm. = 25 mm. = 1 inch

100 feet = 30½ metres (about)  
 1,000   " = 305       "       "  
 2,000   " = 610       "       "  
 3,000   " = 915       "       "  
 4,000   " = 1220     "       "

*N.B.*—When not otherwise stated in the text, every species is believed to be perennial.

Alpes-Marit. (or A.M.) = the French department of les Alpes-Maritimes.

Marit. Alps = the mountains known as the Maritime Alps, partly in France and partly in Italy.





## INTRODUCTION.

### RIVIERA VEGETATION.

By A. G. TANSLEY, M.A.

THE fascination which the shores of the Mediterranean exert on visitors from northern Europe is due to several factors. First and foremost and dominating all others is the Mediterranean climate. The mild sunny winter and spring, with their dry air, comparatively few overcast days and practically no fog or mist is a most welcome change from the damp, raw, sunless winters of north-western Europe. It is true that within the last decade or two the dry cold of alpine Switzerland with its winter sports has drawn away many of the lovers of strenuous open-air exercise from the milder charms of the Riviera. But to those who like to enjoy beautiful and varied scenery not cloaked beneath a thick layer of snow, the Mediterranean coast, particularly the stretch of it protected from the north by the great bulwark of the Maritime and Ligurian Alps, will always retain in winter and spring its pre-eminent charm. Here the natural outdoor life of the country itself, the life of the people and of the vegetation, not merely the artificial hotel life of invaders from the north, continues actively throughout the winter.

The effect of the characteristic Mediterranean climate is of course seen above all in Mediterranean vegetation. The rarity and slightness of frosts and the continuously sunny weather with moderate rainfall enable a great variety of plants to be cultivated which will not stand the northern winter. The olive, the orange, and the lemon are some of the most conspicuous among the useful species, while the great variety of palms and acacias (commonly called "mimosa") that adorn the gardens of the Riviera, together with such trees as the "Californian Pepper" (*Schinus molle*), are the most conspicuous of the purely ornamental cultivated plants. Next to these come the fields of flowers—violets, carnations, narcissus, roses—which form an important industry especially in the neighbourhood of Hyères and of Grasse, cultivated both for export to the great northern markets and for the distillation of perfumes. The variety of trees and flowers from all parts of the world which can be and are cultivated in the Riviera gardens is immense, as may be realized most vividly by a visit to the famous garden founded by the late Sir Thomas

Hanbury at La Mortola near Menton. Given proper water supply, and careful shading and protection in the case of the most delicate species, there are very few plants, with the exception perhaps of those which require the continuous damp heat of the intertropical belt and the more highly adapted northern and alpine forms, which cannot be successfully grown under the climatic conditions of the Riviera.

But this book is concerned mainly with the wild plants of the Riviera, and to these we must now turn. The visitor who spends most of his time on the boulevards and in the gardens of Nice, Monte Carlo, or Menton will get an impression of palms and oranges and of showy flower-beds and well-kept turf. But he will scarcely see anything of the native vegetation beyond glimpses from the window of his "Rapide" of the dark green pine-woods of the Esterel, backed by the splendid red of the porphyritic rocks and the deep blue of the sea; or of the dwarfer pine-woods and sparser evergreen scrub of the sunbaked limestones between Marseilles and Toulon. To see the native vegetation one has of course to get away from the immediate neighbourhood of the larger towns. But it is astonishing how easy it is to get into the midst of the extremely beautiful and characteristic wild vegetation by simply taking train to any small station not in the alluvial plains, which are nearly all cultivated. The coast itself is now largely spoiled for the lover of wild vegetation and scenery—at least along the most frequented parts of the Riviera from St. Raphael to Bordighera. The last remaining considerable stretches of wild coastland within this region—the Cap d'Antibes and the Esterel—have been mostly enclosed within the last few years. A few wild and accessible bits remain, but not many. Along the coast of the Montagnes des Maures, however, from Hyères to St. Raphael, which has only just begun to be "developed," there is much unspoiled scenery—though scarcely so fine as that of the Esterel. A little away from the actual coast, up among the hills, whether the Maures, the Esterel, or behind Menton and Bordighera, it is easy to walk for a day among the pine woods and flowering shrubs with no let or hindrance, and without meeting any one but an occasional peasant.

The wild vegetation of the Riviera is seen at its best in late spring. That is the season, as in more northern climates, when most of the shrubs flower, and when numerous plants, hidden underground during the winter, spring up and unfold their leaves and flowers. But the great characteristic of Mediterranean vegetation, distinguishing it from that of central and north-western Europe, is the evergreen nature of the trees and shrubs which, with few exceptions, retain their leaves throughout the winter; and it is this fact which makes the vegetation so attractive even in mid-winter. The mild winter enables the leaves to carry on their active work for the plant—the work of making fresh organic food from water and

the carbonic acid of the air by the aid of light—uninterruptedly during the whole year. At the same time the very dry, hot summer makes it necessary for the leaves to be protected from too great loss of water by evaporation, and therefore they have a thicker watertight covering than is usual in the leaves of the northern deciduous trees and shrubs. In many cases, too, they are covered either on the lower or on both surfaces by a thick felting of hairs. Also the leaves are thicker and their texture is generally much closer—another means of checking loss of water by evaporation—so that they are less translucent and of a dark, duller green than is the case with our native trees and shrubs. Finally, the leaves of the Mediterranean woody plants are on the whole much smaller and frequently narrower than is the case with more northern types.

All these points can be readily verified in five minutes' examination of the trees and shrubs of the woods or scrub on any of the rocky hillsides of the Riviera. Compare for instance the leaves of the evergreen oaks with those of our own oak or beech, or the leaves of any of the shrubs with those of the English hazel, and the difference can be seen at once. It is probable that the leaf of a typical Mediterranean shrub is able to do much less work for the plant than that of a typical English shrub during the same period, but this is compensated for by the fact that it is able to work during the whole year instead of being limited to a life of about five months.

Besides the ordinary flat kind of leaf, plants with long needle-shaped leaves, i.e. with much reduced surface and therefore with even more limited evaporation of water, are very common in the Mediterranean region. Conspicuous among these are the pines, of which most of the Mediterranean woods are mainly composed, the tree heath, exceedingly common in many places, and such shrubs as the rosemary. It is true that pines and heaths—though not, in general, the same species—also grow in England, but only on special kinds of soil, where they cannot obtain much water. Thus we see that the Mediterranean trees and shrubs are quite distinctive and very well adapted to the climate in which they live.

There are three kinds of pine which grow wild on the Riviera—the maritime pine (*Pinus Pinaster* or *maritima*), the Aleppo pine (*Pinus halepensis*) and the stone pine (*Pinus Pinea*). Each of these is characteristic of a separate kind of situation or habitat, and forms in its own habitat nearly pure woods, though mixtures of the species do occur in certain places.

#### WOODS OF MARITIME PINE AND CORK-OAK.

The maritime pine is a tall, handsome tree with very long and stiff sharp-pointed dark green needles. Sometimes these needles reach a length of eight inches, but that is exceptional; a length of five inches is, however, quite common. The cones are also very large and have a rich brown "lacquered" surface.



The maritime pine forms pure woods on the great masses of siliceous rock, i.e. rock with a very small proportion of lime in its composition, which form the mountain groups of the Maures and the Esterel. These pine-woods are largely owned by the state and regularly forested. When the trees grow close together and are of some size they cast a moderately deep shade and but few shrubs can grow beneath them. In more open woods there is a rich undergrowth of characteristic Mediterranean evergreen shrubs such as the tree heath (*Erica arborea*), the strawberry tree (*Arbutus Unedo*), and two kinds of cistus (*Cistus salviifolius* and *C. monspeliensis*).

Alternating with the woods of maritime pine, especially in the Montagnes des Maures, are extensive woods of cork-oak (*Quercus Suber*), an evergreen oak with very thick bark composed of pure cork. These cork-oak woods are very valuable, and every tree over a certain age is regularly stripped of its outer bark at intervals of several years. The sheets of cork thus obtained are taken to the small towns, such as La Garde Freinet and Collobrières, in the Montagnes des Maures, softened by boiling, pressed flat, and then cut into bottle corks. A visit to one of the small cork-making establishments in these towns is very interesting, and permission to see the various processes of cutting the cork for different purposes is readily granted. The leaves of the cork-oak are of the same general type as those of the holm-oak (*Quercus Ilex*) but are generally shorter and broader and with sharp points or prickles on the edges. The undergrowth of the cork-oak woods is much the same as that of the maritime pine-woods. The cork-oak is confined to siliceous soils: it will not grow on limestones.

#### MAQUIS.

If the woods of maritime pine are completely felled the shrubs of the undergrowth increase in number and frequently form dense thickets, three or four feet high. Such thickets are particularly well developed in Corsica where they cover extensive tracts and often reach a height of six feet or more. They are known to the Italians as *macchie*, and have long been famous as the refuge of the Corsican outlaw who, having killed a man in the course of a vendetta, takes to the *macchia* and often lives there for years, defying all efforts at capture.

Typical *macchie* (*maquis* in the French form) are developed only on siliceous soil, to which some of the most characteristic shrubs (e.g. *Arbutus* and *Erica arborea*), as well as the cork-oak and to a large extent the maritime pine, are almost confined. Many other common shrubs of the maquis, however, such as the cistuses, mainly *C. monspeliensis* and *C. salviifolius*, the lentisc (*Pistacia Lentiscus*) and the yellow flowered spiny *Calycotome spinosa* are found equally on limestone soils. The common heather or ling (*Calluna vulgaris*), though much more typical of the heaths and moors of north-west Europe, is found abundantly in many places in the Riviera maquis.



This is one of the comparatively few species—apart from weeds and sandy seashore plants—common in the British Isles and also occurring among the wild vegetation of the Riviera. In both regions it is almost though not quite confined to siliceous soils.

The maquis are in fact rather closely allied to our English heaths. The “landes” of south-western France are intermediate between the two, possessing many of the same species as the Mediterranean maquis, side by side with others which occur in Brittany and in the British Isles. The leading difference between maquis and heath is the formation of a thin layer of surface peat on the soil of the heath. This peat formation is owing to the cool moist “oceanic” climate in which heaths are developed, and is seen in a much more extreme form in the case of the moors of the western and northern portions of the British Isles, where the peat is much deeper than on heaths. In the warm, dry climate of the Mediterranean peat formation cannot occur to any great extent, because there is not enough water to form peat from the dead plant remains.

Many other species of the maquis are described in this book. Among the most widespread and abundant are the cistuses with their beautiful white flowers, opening in April, and superficially somewhat like the white wild roses of English woods and thickets; the shrubs *Rhamnus Alaternus* and *Phillyrea media*, the pinnate-leaved lentisc (*Pistacia Lentiscus*), the two characteristic climbers of the maquis—the leathery leaved honeysuckle (*Lonicera implexa*) and the liliaceous *Smilax aspera*, with small greenish flowers, and clusters of red berries in winter—all five typical and abundant Mediterranean species with close-textured evergreen leaves: the spiny yellow-flowered *Calycotome*, species of *Genista* and *Cytisus*, and the broom-like “switch-plant” *Spartium junceum*, all members of the Papilionaceae. None of these last is evergreen—the leaves are put out in the spring like those of an English shrub, and are thin and soft in texture, but *Spartium* and *Calycotome* have green stems which do the work of leaves during the winter.

#### ALEPPO PINE-WOODS.

While the maritime pine is found chiefly on siliceous soil the Aleppo pine (*Pinus halepensis*) forms the characteristic pinewoods of the limestones, though it is not confined to these soils. Though closely allied to the maritime pine the Aleppo pine is easily distinguishable and is usually a smaller tree with much shorter and weaker needles of a lighter green, and much smaller cones with less prominent bosses on the cone scales, which are of a duller brown and not “lacquered”.

The shrubby undergrowth of the Aleppo pine-woods on limestone contains many of the same shrubs that are found in the maritime pine-woods and maquis. Cork-oak, arbutus, tree-heath and ling are, however, absent, while rosemary (*Rosmarinus officinalis*), the cistus

with white felted leaves and pink flowers (*Cistus albidus*) are much more abundant though they occur also in maquis. Certain herbs, too, such as the thyme (*Thymus vulgaris*), the rue (*Ruta angustifolia*), and the grass *Brachypodium ramosum* are specially abundant. Various orchids, particularly several beautiful species of *Ophrys*, are also characteristic of these woods, especially after they have been thinned.

#### GARIGUES.

When the Aleppo pine-wood is felled, the shrubs increase and often form thickets which are, however, typically not so high nor so dense as the maquis. In rocky places where the pines are not well developed or are absent altogether the limestone scrub is very open, and there is much bare rock between the shrubs. This type of vegetation is called *garigue*, and bears somewhat the same relation to Aleppo pine-wood as maquis bears to maritime pine-wood or cork-oak-wood. In the garigues of Western Provence, for instance between Marseilles, Toulon, and Aix-en-Provence, the dwarf evergreen oak (*Quercus coccifera*), with leaves very much like holly leaves, is specially abundant and often covers the ground of the open Aleppo pine-woods, and especially the limestone slopes where the trees have been felled, in continuous sheets which are exceedingly prickly to walk through. Another abundant shrub of this region is the small-flowered gorse (*Ulex parviflorus*) which covers many of the hillsides with sheets of gold from January to March.

Garigue has on the whole a drier soil than maquis and the plants show many adaptations to drought.

#### STONE PINE-WOODS.

The stone pine (*Pinus Pinea*), or "pin parasol," is a tree of very different habit from the other two species of pine, which are pyramidal in shape unless the leading shoot is destroyed or bent by the wind. From the very first the branches of the seedling stone pine grow in such a manner as to produce a spherical habit. This is maintained for a considerable time, and then as the tree increases in height the lower branches die off and the crown of the tree takes the characteristic umbrella shape so familiar in Turner's Italian pictures. The umbrella-shaped crown of the stone pine casts a very dense shade, and the thick woods of this tree which occur in places along the Riviera coast are almost bare of undergrowth. The needles of the stone pine are not so long and stout as those of the maritime pine, but they are of a peculiarly rich deep green colour, and a stone pine-wood seen against the blue Mediterranean sky is strikingly beautiful in colour, form, and texture. The cones of the stone pine are much larger than those of the Aleppo pine, but shorter and much more rounded at the top than those of the maritime pine. The seeds are edible and are sometimes served as dessert in the Riviera hotels or stuck into eating chocolate and biscuits.

The stone pine forms characteristic woods on the sandy shores of the western Riviera. The finest stone pine-woods of the French Riviera are on the sandy shore at La Plage d'Hyères, and extend along the isthmus connecting the peninsula of Giens and the mainland. Other examples occur at Le Foux near St. Tropez, and at La Bocca near Cannes. Here the Cannes golf links are intersected with strips of woodland formed of this beautiful tree. Stone pine-woods occur again on the Italian coast, and the species is very often planted singly as an ornamental tree. The finest example in Southern France is the Pin de Bertaud near St. Tropez. The tree is also abundant on the low-lying marls of the Argens Valley behind St. Raphael and Fréjus.

Associated with the stone pine-woods on the isthmus mentioned above is a very luxuriant scrub, consisting for the most part of the evergreen shrubs of the maquis, among which a kind of juniper (*Juniperus phœnicea*), the lentisc (*Pistacia Lentiscus*), and the broom-like *Spartium junceum* are particularly fine and abundant. The maritime and Aleppo pines also occur on the isthmus though in much less quantity than the stone pine.

#### SANDY SHORE VEGETATION.

On the sandy shore of the Rade d'Hyères, in front of the stone pine-woods, there is a vegetation closely resembling that of the sandy shores of north-west Europe and including many of the same species; for instance the sea-rocket (*Cakile maritima*), a very fleshy cruciferous plant with pink flowers, the sea spurge (*Euphorbia Paralias*), and the sea holly (*Eryngium maritimum*). The low dunes are held together by various plants including the marram grass (*Ammophila arenaria*), which is the same plant that binds our northern dunes. Among these widely distributed species are others which are purely Mediterranean, such as *Matthiola tricuspidata*, *Silene nicaensis*, *Crucianella maritima*, *Euphorbia Pithyusa* and the tall flesh-coloured *Asphodelus microcarpus* with tuberous roots.

Partly owing to the wide distribution given to shore plants by ocean currents, partly because of the similarity of the conditions of life on all sea coasts, it is very usual to find the same littoral species extending over great ranges of latitude and longitude.

At the back of the marram grass dunes juniper and pine seedlings may be found growing in the shelter of the marram tufts, and in this way the scrub and woodland is constantly endeavouring to extend its range, so far as the wind—very severe on the middle of this Giens isthmus—will allow it.

Most of the Riviera coast is, however, rocky, and where rocks come down steeply into the sea there is little characteristic shore vegetation to be found. The maritime or the Aleppo pines, often stunted by the wind and sometimes transformed (as at Carqueiranne and the islands of Porquerolles and St. Honorat) into the strangest growth



forms with prostrate branches, and many of the characteristic Mediterranean shrubs, come down to within a few feet of the waves. The wild Cineraria (*C. maritima* = *Senecio Cineraria*) with a thick covering of cottony hairs on the lower surfaces of the leaves, often occurs in such situations, as does the white felted *Anthyllis barba-Jovis*. Both of these, however, are sometimes seen on the rocks of hills many miles from the coast.

#### VEGETATION OF SHADED RAVINES.

In the most shaded ravines of the coastal hills, and particularly those facing north, where the ground is sheltered from the full glare of the southern summer sun and a good water supply is obtainable, a very interesting collection of trees and shrubs is often met with. In the first place the holm-oak (*Quercus Ilex*), often regarded as the Mediterranean tree *par excellence*, particularly affects these ravines, where it often forms dense luxuriant groves. This species does not form woods on the open hillsides, though individual trees are scattered here and there. A number of other shrubs which do not occur on the open hillsides are frequently to be found in such places—shrubs with shining evergreen leaves larger than those of the typical Mediterranean forms. Such are the holly (*Ilex Aquifolium*), the laurustinus (*Viburnum Tinus*), and the laurel (*Laurus nobilis*). These are members of the laurel-wood vegetation—richly developed in warm but oceanic climates such as those of the Canary Islands, Madeira, and Portugal. They require pretty constantly damp air and will not stand, at least in the Mediterranean, exposure to very hot sun on dry hillsides with a south exposure. They all flourish in the British Isles (of which the holly of course is a native) and particularly in the moister climate of the west. Associated with the laurel-leaved shrubs of the shady ravines moisture-loving plants occur—several species of ferns, *Selaginella denticulata*, and various liverworts. The oleander (*Nerium Oleander*) is also found along the stream sides of more open rocky valleys. This shrub requires a constant water supply for its roots, but its leaves, which are very efficiently protected from too rapid evaporation, can withstand dry air very well, since the plant occurs in the beds of rocky ravines even in the North African desert.

#### MONTANE AND SUB-ALPINE VEGETATION.

Typical Mediterranean vegetation extends for a varying distance inland—much further on the sunny slopes of the broad valleys than on the higher hills. On the latter, even fairly close to the coast, some of the characteristic Mediterranean shrubs disappear above a certain altitude and other species replace them.

As one passes to a distance of several miles from the coast and the general level of the country rises towards the Maritime Alps a change gradually comes over the vegetation, and deciduous trees begin to replace the pines. The hoary oak, *Quercus lanuginosa*





PLATE II



Forest of *Pinus Pinaster* and *Quercus Suber* (Cork-Oak) on siliceous soil near Hyères. Mt. Fenouillet beyond. *Calycotome spinosa*, *Arbutus*, and other shrubs beneath; also *Quercus pubescens* in foreground. *Pinus halepensis* occurs, but is not seen in the photograph



Mixed wood on Triassic soil near Carqueiranne, the limestone area being close at hand. *Pinus halepensis* dominant, associated with *Quercus Ilex*. Undergrowth of *Quercus coccifera*, three kinds of *Cistus*, *Erica arborea*, *Juniperus Oxycedrus*, *Lavandula Stoechas*, *Calycotome*, *Phillyrea*, Rosemary, Myrtle, etc.



Umbrella or Stone Pines (*Pinus Pinca*) at mouth of R. Rubaud near La Plage d'Hyères, in January



Aleppo Pines (*P. halepensis*), *Juniperus phænicea*, large specimen with trunk 3 ft. in circum., *Lavatera arborea* and *Arundo Donax* at Beau-Rivage, Carqueiranne, Jan. 22. A bank or washed-up sea-wrack (*Posidonia oceanica*) in foreground





or *pubescens* (a deciduous oak closely allied to our English oaks, but with the leaves and young shoots thickly covered with felted hairs), occurs here and there on the coast itself, but inland it increases in importance and begins to form pure woods, while the Aleppo pine diminishes in numbers. The hop-hornbeam (*Ostrya carpinifolia*), too, a tree whose leaves and male catkins are almost indistinguishable from those of the central and west European hornbeam (*Carpinus Betulus*) but whose female catkins closely resemble hops, appears in considerable numbers on sheltered northern slopes, from which the Aleppo pine is practically absent. The undergrowth of these woods still consists of typical Mediterranean shrubs, and on slopes with a southern exposure Aleppo pine-woods still occur. This can be well seen on the line of the "Sud de la France" railway between Vence and Grasse. Much of this country, however, has been completely denuded of forest. Further inland still and at a higher altitude, the Mediterranean pines disappear altogether, and on northern slopes the Scots pine (*Pinus sylvestris*) and the beech (*Fagus sylvatica*) begin to appear, along with many deciduous central and west-European shrubs such as hazel, roses, hawthorn, blackthorn, and flowers like our northern violets, cowslip, dog's mercury, and so on; while the Mediterranean plants have nearly disappeared.

We are now in the "montane region" with its markedly cooler and damper climate, where snow lies in winter for long periods so as to interrupt the active life of the vegetation. Even at this distance from the coast, however, directly we descend into a broad valley running east and west, such as those of the Esteron or of the Var, we find the typical Mediterranean vegetation occupying the side facing south, where it is both sheltered and warmed, while the northern exposure is covered with woods of the Scots pine, often mixed with deciduous oak and beech. The conditions favouring the development of the Aleppo pine and the Scots pine are mutually exclusive, so that the two trees very rarely exist side by side. The appearance of the one species is the signal, so to speak, for the disappearance of the other.

Further north and at higher altitudes still, as we approach closer to the main range of the Maritime Alps, spruce and larch woods appear on the northern faces of the hills and the Scots pine shifts round to the southern faces, for instance in the neighbourhood of St. Martin Vesubie, behind Nice. We are now in the region of the "subalpine woods" extending up to the limit of trees, and above this limit we come into the region of true Alpine vegetation, and eventually of glaciers and snow-fields.

## I.

### SYNOPSIS OF THE FAMILIES.

Based on the system of Bentham and Hooker, which adhered closely to that of Jussieu as modified by de Candolle. The position of the Gymnosperms has, however, been altered in accordance with modern knowledge.

*Adapted to the French (and British) genera.*

Sub-Kingdom I. **Phanerogamic** or **Flowering** Plants. Plants provided with stamens, and ovules which after fertilization by pollen from the stamens become seeds containing an embryo.

Phylum I. **Angiospermæ**. Seeds enclosed in ovaries.

Class I. **Dicotyledons**. When perennial the stem increases in diameter annually by a layer of wood added to the outside of the old wood, and another of bark added to the inside of the old bark. Leaves with usually netted veins. Flowers with the organs mostly in fours or fives. Embryo almost always with two cotyledons.

#### DIVISION I. **Polypetalæ**.

Flowers usually with both calyx and corolla. Petals free.

Sub-division I. **Thalamifloræ**. Stamens inserted on the receptacle (hypogynous), free from the calyx, or on a disk that terminates the pedicel. Ovary superior. (There are, however, some exceptions.)

**Ranunculaceæ**. Flowers regular or irregular. Stamens indefinite; anthers basifixed, opening by slits. Seeds albuminous. Herbs with alternate leaves (except *Clematis*).

**Berberidaceæ**. Flowers regular, 3-merous. Stamens definite, opposite the petals; anthers basifixed, opening by recurved valves. Seeds albuminous. Shrubs with alternate leaves.

**Nymphæaceæ**. Flowers regular. Stamens indefinite; anthers basifixed. Ovary many celled. Stigmas sessile. Seeds albuminous. Aquatic plants with showy flowers.

**Papaveraceæ**. Flowers regular, 2-merous. Stamens indefinite; anthers basifixed. Ovules usually parietal. Style 1, or stigmas sessile. Seeds albuminous. Herbs with milky juice, alternate leaves, and usually showy flowers.

**Fumariaceæ**. Flowers irregular. Sepals 2. Petals 4. Stamens 6 in 2 bundles. Ovary 1-celled; ovules many, parietal, or 1 basal. Style 1 or 0. Seeds albuminous. Weak herbs with exstipulate, alternate leaves; flowers usually small.

**Cruciferæ**. Flowers usually regular. Sepals 4. Petals 4. Stamens usually 6, 4 longer than the others. Ovary 1-2 celled, of 2 carpels; ovules parietal. Style 1 or 0. Seeds exalbuminous. Herbs with exstipulate, alternate leaves. Flowers usually small.

**Capparidaceæ.** Flowers regular. Petals and sepals usually 4. Stamens many. Ovary sessile or stalked, 1 celled; ovules many, on 2-5 parietal placentas. Fruit capsular or a berry. Endosperm o. Trees, shrubs or herbs, with alternate simple or compound leaves. Stipules spinescent in *Capparis*.

**Resedaceæ.** Flowers irregular. Sepals and petals 4-7 each. Stamens indefinite. Ovary 1 celled, of 2-6 carpels; ovules parietal; stigma sessile. Seeds exalbuminous. Herbs with alternate leaves and small greenish white flowers.

**Cistaceæ.** Flowers regular. Sepals 3-5. Petals 5. Stamens indefinite. Ovary 1 celled, of 3 carpels; ovules parietal; styles 3. Seeds albuminous. Shrubs, with usually stipulate leaves, showy flowers and fugaceous petals.

**Violaceæ.** Flowers irregular. Sepals, petals and stamens 5 each. Ovary 1 celled; ovules parietal; style 1. Capsule 3 valved, loculicidal. Seeds albuminous. Herbs with alternate, stipulate leaves.

**Polygalaceæ.** Flowers irregular. Inner sepals petaloid. Petals adnate to the staminal sheath. Stamens 8; anthers 1 celled. Ovary 2 celled, 2 ovuled; style 1. Leaves alternate or subopposite, exstipulate. Flowers small, often blue.

**Frankeniaceæ.** Flowers regular, small. Sepals, petals and stamens 4-6 each. Ovary 1 celled, of 2-5 carpels; ovules parietal; style 1. Littoral herbs with small opposite exstipulate leaves.

**Caryophyllaceæ.** Flowers regular, often small, white or pink. Sepals and petals 4 or 5 each. Stamens 8 or 10. Ovules many. Styles 2-5. Seeds albuminous; embryo curved. Leaves opposite, stipulate or not.

**Portulacaceæ.** Flowers regular, small. Sepals 2. Petals 4 or more. Stamens 3 or more. Ovules 2 or more. Style 1, 2-3 fid. Seeds albuminous; embryo curved. Leaves entire.

**Tamaricaceæ.** Flowers regular, very small. Sepals and petals 4-5 each. Stamens 4 or more. Ovules 2 or more. Styles 3-4. Shrubs with minute exstipulate leaves.

**Hypericaceæ.** Flowers regular, often showy, yellow. Sepals and petals 5 each. Stamens many, united in bundles. Ovary more or less completely 3-5 celled, cells many ovuled. Styles 3-5. Seeds exalbuminous. Herbs or shrubs with opposite exstipulate leaves, often gland-dotted.

**Malvaceæ.** Flowers regular, often showy. Sepals 5, valvate, persistent. Petals 5, twisted in bud. Stamens monadelphous, anthers 1 celled. Ovary many celled. Albumen scanty or o. Embryo crumpled. Herbs or shrubs with alternate stipulate leaves.

**Tiliaceæ.** Flowers regular. Sepals 5, valvate, deciduous. Petals 5, stamens indefinite; anthers 2 celled. Ovary 2-10 celled, cells 2 ovuled, style 1. Seeds albuminous. Trees with alternate, stipulate leaves.

Sub-division II. **Discifloræ.** Stamens usually definite, inserted upon or inside or outside of a development of the floral axis which forms a ring at the base of the ovary, or is broken up into glands. Ovary superior.

**Linaceæ.** Flowers regular, usually showy. Sepals 4 or 5. Petals 4-5, convolute in bud. Stamens usually 4-5. Ovules 1-2. Styles 3-5. Seeds albuminous. Herbs with narrow, entire, exstipulate leaves.

**Geraniaceæ.** Flowers regular or not, often showy. Sepals 3-5. Petals 3-5, imbricate in bud. Stamens definite. Ovary 3-5 lobed and celled. Styles 1 or more. Albumen scanty or o. Cotyledons plaited or convolute. Herbs with opposite or alternate leaves.



**Zygophyllaceæ.** Sepals 5, imbricate. Petals 5, regular. Stamens 10, separate. Ovary of 5 cells, splitting in the fruit into as many carpels. Styles united. Small herbs with opposite leaves.

**Rutaceæ.** Flowers 2 or 1 sexual. Sepals 4-5 imbricate. Petals 4-5, distinct, imbricate or valvate. Disk large or small. Stamens usually definite. Carpels 4-5, free or connate; ovules 1-2 or many in each cell. Fruit various. Shrubs (in Europe). Leaves simple or compound.

**Ampelideæ.** Calyx entire or with 5 small teeth. Petals 4 or 5, valvular, inserted with the stamens on a glandular disc. Ovary with 4 ovules, becoming a large berry. Climbing shrubs with large leaves and very small, green flowers.

**Aquifoliaceæ.** Flowers small, regular. Sepals 4-5. Petals 4-5, often connate, imbricate in bud. Stamens 4-5. Ovary 3-5 celled, cells 1-2 ovuled. Seeds albuminous. Shrubs with evergreen, alternate, exstipulate leaves.

**Celastraceæ.** Flowers regular. Calyx and petals 4-5 lobed, both imbricate in bud. Stamens 4-5, inserted on the disk. Ovary 3-5 celled. Seed arillate. Trees or shrubs with small flowers and leaves various.

**Rhamnaceæ.** Flowers regular. Calyx 4-5 lobed, valvate in bud. Petals 4-5, minute. Stamens 1 opposite each petal, inserted on calyx tube at edge of disk. Ovary 3 celled, 1 ovule erect in each cell. Shrubs with small, inconspicuous flowers and small stipules.

**Sapindaceæ.** Flowers regular. Calyx 4-9 lobed, petals 4-9, both imbricate in bud. Stamens 8-12, inserted on disk. Ovary 2 lobed and 2 celled, cells 2 ovuled. Fruit a samara. Trees or shrubs with opposite leaves and small green flowers.

**Fraxinaceæ.** Flowers regular, very small. Sepals and petals 4. Stamens 2. Fruit much compressed and prolonged into an indehiscent samara. Trees with imparipinnate, exstipulate leaves.

**Coriariaceæ.** Flowers small, regular, 2 sexual. Sepals 5, imbricate, persistent. Petals 5, keeled within. Stamens 10 free (usually). Disk 0. Carpels 5 distinct, 1 celled, whorled, on a fleshy receptacle; ovules 1 in each cell, pendulous. Fruit of 5 distinct 1-celled, 1-seeded nuts. Glabrous shrubs with 4-angular branches and opposite leaves. A family of doubtful affinity, and only 1 genus.

**Simarubaceæ.** Flowers usually regular 1 or 2 sexual. Sepals 5. Petals 5, imbricate or valvate. Stamens 10, distinct, inserted at base of disk. Ovary free, lobed or entire, 1-5 celled, cells 1 ovuled. Fruit of 1-5 one seeded winged carpels, or a 1-seeded drupe. Trees or shrubs with alternate stipulate, usually pinnate leaves.

**Anacardiaceæ.** Flowers 1 or 2 sexual. Calyx 3-5 part. Petals free, 3-5. Disk annular. Ovary of 5 distinct, 1 ovuled carpels. Drupe with a 1 celled 1 seeded stone. Embryo large, endosperm 0. Trees or shrubs with alternate simple or compound exstipulate leaves.

Sub-division III. **Calycifloræ.** Petals usually distinct, stamens perigynous or epigynous (i.e. inserted on the calyx or disk). Ovary often more or less enclosed by the development of the floral axis, sometimes inferior.

\* *Petals and Stamens mostly perigynous.*

**Leguminosæ.** Flowers irregular, papilionaceous. Stamens 10, subhypogynous or inserted on the calyx tube, all or 9 of them combined. Ovary of 1 carpel. Fruit a legume. Albumen 0. Herbs, shrubs or trees; leaves usually alternate compound and stipulate.

**Rosaceæ.** Flowers regular. Calyx 4-5 (rarely 8-9) lobed, imbricate or valvate



in bud. Petals 4-5 (rarely 8-9 or 0), imbricate in bud. Stamens usually indefinite, inserted on calyx tube or disk, incurved in bud. Ovary of 1 or more free or connate carpels. Fruit various. Albumen 0. Herbs, shrubs or trees, with usually alternate, stipulate leaves and showy flowers.

**Myrtaceæ.** Flowers regular, 2 sexual. Calyx superior; limb short, 4-5 lobed. Petals 4 or 5, free or united in a capsule. Stamens many, epigynous. Ovary 2-4 celled, cells many ovuled, style simple. Fruit indehiscent, 1-many-seeded; endosperm 0. Trees or shrubs with simple, usually gland-dotted leaves.

**Onagraceæ.** Flowers usually regular, often showy. Calyx lobes 2 or 4, valvate in bud. Petals 2 or 4, twisted in bud. Stamens epigynous, definite. Ovary inferior, 1-4 celled. Seeds many, exalbuminous. Herbs with exstipulate leaves.

**Lythraceæ.** Flowers regular. Calyx lobes 3-6, valvate in bud. Petals 3-6, crumpled in bud. Stamens definite. Ovary 2-6 celled. Capsule many seeded. Seeds exalbuminous. Herbs with opposite or whorled entire, exstipulate leaves.

**Cucurbitaceæ.** Flowers regular, 1 sexual. Calyx 5 toothed. Corolla 5 lobed. Stamens 3, epigynous. Ovary inferior, 3 celled, many ovuled. Fruit a large berry. Seeds exalbuminous. Herbs with tendrils and alternate leaves.

**Crassulaceæ.** Flowers regular. Calyx 4-12 lobed. Petals 4-12. Stamens twice as many as petals (except in *Tillæa*). Carpels follicular, usually 5, separate. Succulent herbs with small flowers and exstipulate leaves.

**Saxifragaceæ.** Flowers regular. Calyx 4-5 lobed. Petals 4-5, rarely 0, imbricate in bud. Stamens definite. Ovary syncarpous at base. Carpels usually 2, connate; placentas usually axile. Fruit capsular. Seeds albuminous. Herbs with rather small flowers and varied leaves.

**Ribesiaceæ.** Shrubs. Flowers regular. Stamens definite. Ovary inferior. Placentas parietal. One style. Fruit a berry.

**Haloragaceæ.** Flowers usually apetalous and 1 sexual. Calyx lobes 2-4, valvate in bud or 0. Stamens epigynous, 1 or more, definite. Ovary inferior, 1-4 celled. Seeds albuminous. Usually aquatic or marsh herbs with alternate or whorled leaves and very inconspicuous flowers.

**Cactaceæ.** Flowers regular, showy. Sepals in many series, gradually passing into petals. Stamens numerous, inserted on a disk which covers the top of the germen. Style 1. Stigmas many. Fruit fleshy, of 1 cell. Plants shrubby and fleshy, with jointed stems.

**Ficoideæ.** Flowers regular, showy, usually 2 sexual. Sepals 5, inferior. Petals 0. Stamens perigynous or hypogynous. Ovary 2-5 celled, or of 5 free 1-ovuled carpels. Fruit a capsule, or of 5 free indehiscent carpels. Seeds reniform; embryo curved round mealy endosperm. Fleshy herbs with simple opposite or whorled leaves.

\*\* *Petals and Stamens epigynous.*

**Umbelliferae.** Flowers usually regular, umbelled, small. Calyx lobes 5 or 0. Petals 5. Stamens 5, incurved in bud. Ovary 2 celled. Styles 2. Fruit of 2 separable indehiscent dry carpels. Seeds albuminous. Herbs with alternate leaves often much divided.

**Araliaceæ.** Flowers of *Umbelliferae*, but shrubs or trees. Ovary often of more than 2 carpels. Fruit of inseparable usually fleshy carpels. Leaves alternate. Flowers usually green.

**Cornaceæ.** Flowers regular, small. Calyx lobes 4-5 or 0. Petals 4-5. Stamens 4-5. Ovary 2 celled, cells 1 ovuled. Style simple. Drupe 1-2 seeded. Seeds albuminous. Herbs, shrubs or trees, with opposite leaves.

DIVISION II. **Gamopetalæ or Monopetalæ.**

Flowers with both calyx and corolla. Petals more or less connate into a 2- or more-lobed corolla. (Exceptions in Ericaceæ and Plumbaginaceæ.)

Series 1. *Ovary inferior. Stamens as many as corolla lobes.*

**Caprifoliaceæ.** Flowers regular or not. Corolla lobes valvate or imbricate in bud. Ovary 1-5 celled. Seeds albuminous. Shrubs, or rarely herbs with opposite, exstipulate leaves and usually showy flowers.

**Rubiaceæ.** Flowers regular, small. Corolla lobes valvate in bud. Ovary 2 celled; cells 1 ovuled. Seeds albuminous. Herbs (in Europe) with whorled or opposite, exstipulate leaves.

**Valerianaceæ.** Flowers irregular. Corolla lobes imbricate. Stamens 1-3 or 5 free. Ovary 1-3 celled, ovule pendulous. Seeds exalbuminous. Herbs with opposite leaves and small flowers.

**Dipsaceæ.** Flowers regular or not, small, in involucrate heads. Corolla lobes imbricate. Stamens 4. Ovary 1 celled; ovule 1, pendulous. Seeds albuminous. Herbs with opposite, exstipulate leaves.

**Compositæ.** Flowers in involucrate heads, small or minute. Corolla lobes valvate. Stamens 4-5, anthers usually connate. Ovary 1 celled; ovule 1, erect. Seeds exalbuminous. Herbs or rarely shrubs with various exstipulate leaves.

**Lobeliaceæ.** Flowers irregular, of 1 petal inserted on the calyx. Stamens 5, growing on the ovary. Stigma surrounded by a membranous cup or fringe.

**Campanulaceæ.** Flowers regular or irregular. Stamens 5, separate or connate. Stigma not surrounded by a membrane. Ovary 2-8 celled. Herbs with alternate, exstipulate leaves and usually showy flowers.

Series 2. *Ovary generally superior. Carpels more than 2.*

**Vacciniæ.** Flowers regular. Stamens 8 or 10, epigynous. Ovary 4-5 celled, inferior. Small shrubs with alternate, exstipulate leaves.

**Ericaceæ.** Flowers regular, 4-5 cleft. Stamens 8 or 10 on an hypogynous disk, and not attached to corolla. Anthers 2 celled, opening by pores and sometimes awned. Shrubs or trees, rarely herbs, with small linear leaves.

**Monotropaceæ.** Leafless parasitic herbs, the leaves reduced to scales of the same colour as the stem.

**Primulaceæ.** Corolla regular. Stamens 4-5, opposite corolla lobes. Ovary 1 celled. Style 1. Stigma capitate. Capsule 5-10 valved, many seeded. Herbs, flowers often showy.

**Styracaceæ.** Flowers 2 sexual, regular. Calyx superior; limb small, 5 lobed, imbricate. Petals 5, free or slightly connate at base, imbricate. Stamens many and in several series at base of corolla. Ovary 2-3 celled; ovules 2, pendulous in each cell, style simple. Drupe 1-3 seeded. Endosperm copious. Trees or shrubs with alternate leaves.

Series 3. *Ovary generally superior. Carpels usually 2.*

**Oleaceæ.** Corolla regular. Stamens 2, alternate with corolla-lobes. Ovary 2 celled. Fruit a drupe. Trees or shrubs with opposite, exstipulate leaves.

**Apocynaceæ.** Corolla regular, often showy. Stamens 4-5, alternate with corolla lobes; anthers basifixed. Carpels 2, free below. Fruit of 2 follicles. Shrubs or creeping herbs with opposite entire leaves.

**Asclepiadaceæ.** Calyx inferior; lobes 5, imbricate. Corolla tube often with a ring of scales in throat; lobes 5, valvate or contorted. Stamens 5, on base of corolla, fil. usually connate in a fleshy tube; anthers adnate by a broad connective to stigma, 2-celled. Carpels 2, distinct, inclosed in stamen-tube, many ovuled; styles 2, stigma 1, adnate to anther. Follicles 2. Seeds many, crowned with a long tuft of hairs. Herbs or shrubs, usually twining. Leaves opposite, exstipulate, entire.

**Gentianaceæ.** Corolla regular, 4-8 lobed, twisted in bud. Stamens 4-8, anthers versatile. Ovary 1 celled; ovules many, parietal. Fruit usually capsular. Herbs with entire, opposite leaves and often showy flowers.

**Convolvulaceæ.** Sepals 5. Corolla usually regular, often showy, 5 lobed, plaited and twisted in bud. Stamens 5. Ovary 2 celled, cells 2 ovuled. Stigmas 2 fid. or styles 2. Herbs with alternate, simple leaves. (o in *Cuscuta*.)

**Boraginaceæ.** Calyx 5 lobed, valvate in bud. Corolla regular, 5 lobed, imbricate in bud. Stamens 5 alternate with corolla lobes. Ovary of two 2 lobed, 2 celled, 2 ovuled carpels. Fruit of 4 nutlets. Hispid or scabrid herbs with alternate, entire, exstipulate leaves.

**Solanaceæ.** Calyx 5 fid. Corolla 5 lobed, imbricate, plaited or valvate in bud. Stamens 5, often cohering. Ovary 2 celled, ovules many, axile. Fruit a capsule or berry. Herbs with alternate leaves or in pairs, exstipulate.

**Verbascaceæ.** Calyx 5 fid. Corolla 5 lobed, slightly irregular, rotate. Inflorescence centripetal. Stamens 5, declinate unequal. Erect showy herbs with alternate leaves and flowers in simple or compound racemes. Often placed with Scrophulariaceæ and formerly with Solanaceæ.

**Orobanchaceæ.** Sepals 4 or 5. Corolla irregular, gaping. Stamens 4, didynamous. Ovary 1 celled. Parasitic herbs with alternate scales instead of leaves. Flowers rather large, often brownish.

**Scrophulariaceæ.** Calyx 4-5-merous. Corolla irregular, often 2 lipped, 4-5 lobed. Stamens 4, didynamous, rarely 2 or 5. Ovary 2 celled, ovules many, axile. Herbs with various leaves.

**Lentibulariaceæ.** Calyx 2-5-partite. Corolla irregular, 2 lipped. Stamens 2. Capsule 2 valved, many seeded. Water or marsh plants.

**Acanthaceæ.** Calyx 4-5-partite. Corolla 2 lipped; lobes imbricate or contorted. Stamens 4 or 2; anthers 2 or 1 celled. Ovary 2 celled; ovules 1 or more, superposed. Style usually bifid. Capsules loculicidal. Seeds usually compressed and often hairs. Herbs or shrubs with opposite simple leaves. Flowers often with conspicuous bracts.

**Verbenaceæ.** Calyx cleft or toothed. Corolla irregular, tubular, often 2 lipped. Stamens 4. Ovary not lobed, 2-4 celled. Fruit a drupe, berry, or of 1-4 nutlets. Flowers usually small.

**Labiateæ.** Calyx 5 cleft or 2 lipped. Corolla usually 2 lipped. Stamens 2 or 4, didynamous. Ovary of two 2 lobed, 2 celled, 2 ovuled carpels. Fruit of 1-4 1 seeded nutlets. Flowers in opposite cymes forming false whorls. Herbs or shrubs with opposite leaves, often square stems.

The next 3 Families are somewhat anomalous and difficult to place.

**Plumbaginaceæ.** Corolla regular. Stamens 4-5. Styles or style arms 5. Utricle 1 seeded. Flowers small. Chiefly maritime, scape-bearing herbs.

**Plantaginaceæ.** Sepals 4. Corolla scarious, 4 lobed, imbricate in bud. Stamens 4; anthers pendulous. Ovary 2-4 celled, style and stigma filiform. Capsule 1-4 celled. Herbs with alternate or radicle leaves and inconspicuous flowers.

**Globulariaceæ.** Calyx 5 cleft, imbricate in bud. Corolla 5 cleft. Stamens 4. Ovary of 1 cell and 1 pendulous seed. Small shrubby or herbaceous plants with blue flowers in compact heads.



DIVISION III. *Incompletæ.*

Corolla and often calyx absent or united into a single perianth.

\* *Perianth single, inferior.*

**Phytolaccaceæ.** Perianth inferior, 4-5 partite, imbricate in bud. Stamens inserted on its base. Ovary 1-10 celled. Styles as many as there are cells to ovary. Leaves alternate, exstipulate. Fruit a berry.

**Amarantaceæ.** Perianth 3-5 partite, scariose, persistent. Stamens 3 or 5 inferior. Ovary of 1 cell. Leaves without sheaths or stipules.

**Chenopodiaceæ.** Flowers 1-2 sexual. Calyx 3-5 lobed, herbaceous persistent round the fruit. Stamens 1-5, opposite sepals. Ovary 1 celled. Utricle 1 seeded, indehiscent. Albumen floury or fleshy. Herbs with exstipulate leaves or stems leafless and jointed, and green, inconspicuous flowers.

**Polygonaceæ.** Flowers usually 2 sexual. Sepals 3-6, green or coloured. Stamens 5-8, perigynous or hypogynous. Fruit usually enclosed in sepals. Ovules erect. Albumen floury, embryo curved. Herbs with alternate leaves, sheathing stipules and small flowers.

**Thymelæaceæ.** Flowers 2 sexual. Calyx tubular, 4-5 lobed, stamens definite, inserted in the tube. Ovules pendulous. Albumen 0 or scanty; embryo straight. Shrubs with entire leathery leaves, tenacious bark, and sweet scented flowers.

**Lauraceæ.** Flowers 1 sexual. Perianth inferior, usually 6 cleft. Stamens usually 9, in 3 rows; fil. flattened, 2 glandular at the base. Anthers usually 4 celled, opening by valves. Ovary superior, 1 celled, 1 ovuled, ovule pendulous. Fruit indehiscent. Endosperm. Trees or shrubs, with alternate or whorled, rarely opposite, entire leaves.

**Elæagnaceæ.** Calyx in ♂ flowers 3-4 sepalous; in ♀ 2 sexual, flowers tubular. Stamens 4-8 at base of sepals in ♂ flowers, ovule erect. Albumen 0 or scanty; embryo straight. Shrubs with silvery scales, entire, exstipulate leaves and inconspicuous flowers.

\*\* *Perianth single, superior.*

**Loranthaceæ.** Calyx 4 cleft, valvate in bud. Stamens one, adnate to each calyx lobe. Ovary 1 celled; ovule 1, adnate to ovary. Seed erect, radicle superior, albumen fleshy. Parasitic shrubs, with entire, exstipulate leaves and inconspicuous flowers.

**Santalaceæ.** Calyx 3-5 lobed, valvate in bud. Stamens 1, adnate to each calyx lobe. Ovary 1 celled; ovules several, pendulous from a free central placenta. Albumen fleshy. Shrubs or herbs, often root parasites; leaves usually alternate, entire, exstipulate. Flowers inconspicuous.

**Cytinaceæ.** Flowers monœcious. Perianth superior, 4-5 lobed. Stamens 8 or more, on a central column. Ovary of 1 cell with many seeds on parietal placenta. Parasitic plants with no leaves.

**Aristolochiaceæ.** Calyx 3 lobed, or 1-2 lipped, valvate in bud. Stamens 6-12, epigynous or gynandrous. Ovary 4-6 celled; ovules many. Embryo minute. Herbs or shrubs with alternate, exstipulate leaves.

**Euphorbiaceæ.** Flowers 1 sexual. Calyx 0 or sepals 2 or more. Stamens 1 or more, anthers didymous. Ovary 2-3 lobed, 1 celled; ovules 1-2 in each cell, pendulous, anatropous. Styles 2-3. Albumen copious, fleshy. Herbs or shrubs with various leaves. Inflorescence often of many stamens and 1 pistil in a small calyx-like involucre. Perianth often 0.

**Urticaceæ.** Flowers 1-2 sexual. Male perianth 3-8 lobed, female tubular or 3-5 cleft or a scale. Stamens opposite the perianth lobes. Ovary 1 celled. Ovule solitary, pendulous or erect. Herbs or shrubs with various stipulate leaves and minute green flowers.



**Celtiaceæ.** Flowers green, 1-2 sexual. Perianth persistent. Fruit a globular drupe, black when ripe. The only French species is a tree with nettle-like leaves.

**Ulmaceæ.** Flowers usually 2-sexual, reddish, in clusters. Perianth persistent, of 4-8 equal lobes. Stamens 4-8, opposite the lobes of perianth. Fruit a samara. Trees with alternate, exstipulate leaves.

**Ceratophyllaceæ.** Flowers 1-sexual. Perianth 8-12-partite. Stamens many, sessile. Ovary superior, 1-celled. Style 1, persistent. Ovule 1, pendulous. Submerged plants with minute flowers and multifid leaves.

**Callitricheæ.** Flowers 1-sexual, minute. Perianth 0. Stamens 1, filament long. Ovary 4-angled, 4-celled. Styles 2. Fruit of 4, 1-seeded, indehiscent carpels. Small green aquatic plants.

**Artocarpaceæ.** Flowers monœcious. ♂ flowers have a calyx of 2-4 divisions and 1 stamen. ♀ flowers have a tubular receptacle very concave. Ovary 2-3 celled.

\*\*\* *Male flowers in catkins, females in spikes or short catkins.*

**Cupuliferæ.** Flowers mono-diœcious. Males in catkins. Sepals 0 or 5 or more. Stamens 5-20. Females sessile in an involucre of bracts. Calyx superior, 5-6 toothed or 0. Ovary 2-3 celled. Styles 2-3; cells 1-2 ovuled. Fruit 1 celled, 1 seeded, dry, indehiscent. Trees or shrubs with alternate, stipulate leaves and small green flowers.

**Juglandaceæ.** Flowers monœcious. ♂ flowers in catkins. ♀ flowers solitary and sessile on a 3 lobed bract, stigmas 2. Perianth of 3-6 scales, adnate to a 3 lobed stipulate bract. Stamens 4-12, on the perianth. Fruit a small globose nut, endocarp 2 valved. Trees, with alternate, pinnate leaves.

**Salicaceæ.** Flowers diœcious, without perianth, both sexes in catkins. Stamens 1 or more. Ovary 1 celled. Stigmas 2. Ovules many, parietal. Capsule 2 valved. Albumen 0. Trees or shrubs with alternate, stipulate leaves. An anomalous family not closely allied to any other.

Class II. **Monocotyledons.** Stem with the wood forming longitudinal bundles irregularly disposed, not in concentric layers, and having no defined central pith. Leaves mostly parallel-veined. Flowers with organs mostly in threes or fours, never in fives. Embryo with a single cotyledon; first-formed leaves alternate; radicle not branching, but throwing out adventitious roots.

**Alismaceæ.** Flowers usually 2 sexual. Perianth 6-partite, inner segments or all petaloid. Stamens 6 or more. Carpels many. Fruit of many achenes; albumen 0; radicle very large. Ovary superior. Aquatic or marsh herbs with sometimes conspicuous flowers.

**Hydrocharidaceæ.** Flowers regular, 1 sexual. Perianth 6-partite, outer segments herbaceous, inner usually petaloid. Stamens 3 or more. Ovary 1 or 3-6 celled, inferior. Fruit a berry. Water plants with floating or erect leaves and usually conspicuous flowers.

\* *Perianth 0 or rudimentary. Ovary superior, syncarpous or monocarpellary.*

**Typhaceæ.** Flowers monœcious in catkins or heads. Perianth 0 or of scales or hairs. Stamens many, anthers basifixed. Ovary 1-2 celled; style persistent; ovule 1, pendulous. Fruit a drupe or utricle. Erect marsh or water plants, with linear leaves and small or minute flowers in conspicuous spiked heads.

**Araceæ.** Flowers sessile on a spadix, enclosed in a spathe when young, 1-2 sexual. Perianth 0 or of scale-like sepals. Stamens few or many. Ovary 1 or more celled. Berry few or many seeded. Herbs with often broad net-veined leaves and flowers with conspicuous spathes or spadixes.

**Lemnaceæ.** Minute floating cellular green fronds. Flowers in slits or cavities of the frond, most minute and rare, 1-3 in a spathe. Stamens 1-2. Ovary 1 celled, 1-7 ovuled. Fronds covering ponds.

**Naiadaceæ.** Flowers 1-2 sexual. Perianth of 4 valvate sepals or imperfect, or 0. Stamens as many as sepals or fewer. Carpels 1-4, 1 ovuled. Radicle very large. Marsh or water plants with inconspicuous green flowers.

**\*\* Perianth 2 seriate, usually coloured. Ovary superior, syncarpous.**

**Liliaceæ.** Flowers usually 2 sexual, and showy. Perianth usually 6 cleft or of 6 segments, petaloid. Stamens 6, opposite perianth segments. Ovary 3 celled. Fruit various. Herbs, except *Ruscus*, of various habit.

**Juncaceæ.** Flowers 2 sexual. Perianth of 6 green or brown segments. Stamens usually 6. Ovary 1-3 celled with 3 basilar, or many parietal or axile ovules. Capsule 3-valved. Rushy herbs with very narrow leaves and small brownish-green flowers.

**\*\*\* Perianth 2 seriate, coloured (except Dioscoreaceæ). Ovary inferior, syncarpous, 3 celled. Seeds large, albuminous.**

**Dioscoreaceæ.** Flowers 1 sexual. Perianth small, 6 partite, herbaceous. Stamens 6; anthers bursting inwards. Ovary 3 celled. Berry few seeded. Climbing herbs, with broad leaves with netted veins and inconspicuous flowers.

**Iridaceæ.** Flowers 2 sexual. Perianth 6 partite, petaloid. Stamens 3, separate; anthers bursting outwards. Ovary 3 celled. Capsule 3 valved. Herbs with tuberous root, or creeping root-stock, narrow leaves and usually handsome flowers.

**Amaryllidaceæ.** Flowers 2 sexual. Perianth 6 partite, petaloid. Stamens 6, separate; anthers bursting inwards. Ovary 3 celled. Capsule 3 valved. Herbs with narrow leaves and usually handsome flowers.

**\*\*\*\* Trees with unbranched stem, and numerous flowers enveloped in a spathe.**

**Palmaceæ.** Flowers mostly 1 sexual. Perianth inferior, 6 partite or lobed in 2 series. Stamens usually 6, on base of perianth; anthers versatile. Ovary 1-3 celled, or of 3 distinct or connate carpels, cells 1-2 ovuled. Shrubs or trees, armed or not. Stem erect, scandent or decumbent. Leaves alternate, variously compound. Inflorescences at first enclosed in a woody or coriaceous spathe. Flowers usually small, green or yellowish.

**\*\*\*\* Perianth 2 seriate, coloured. Ovary inferior, syncarpous, 1 celled.**

**Orchidaceæ.** Flowers irregular, 2 sexual. Perianth 2 seriate, coloured. Ovary inferior, syncarpous, 1 celled. Stamens 1 or 2, adnate to the style. Fruit capsular. Herbs of various habit.

**\*\*\*\*\* Perianth 0 or of bristles or minute scales. Ovary 1 celled, 1 ovuled; styles or stigmas 2-3. Flowers spicate, solitary in the axils of imbricating bracts or glumes (Glumaceæ).**

**Cyperaceæ.** Flowers 1-2 sexual. Perianth 0 or of bristles, rarely of scales. Stamens 1-3; anthers basifixed. Ovary 1 celled, style 1, stigmas 2-3, papillose, ovule 1, erect. Fruit compressed or 3-gonous. Stem usually solid and 3-gonous; leaves often grass-like but with entire sheaths.

**Gramineæ.** Flowers usually 2 sexual. Perianth usually of 2 very minute scales. Stamens usually 3; anthers versatile. Ovary 1 celled, stigmas 1-2, hairy or feathery. Fruit terete or grooved on one side. Stem cylindrical, usually hollow except at the joints; leaves with sheaths split often to the base.

Phylum II. **Gymnospermæ.** Trees and shrubs with (mostly) needle-shaped or scale-like leaves. Seeds naked, generally borne on the scales of cones.

**Coniferæ.** Perianth 0, flowers in cones. Male with 2-8 celled anthers, usually forming a small yellow-brown deciduous cone. Female cones large, often woody, with one or more naked ovules on the scales, or of a solitary ovule

surrounded by a fleshy cup or aril (*Taxus*). Albumen fleshy; embryo straight. Trees or shrubs with numerous small alternate, opposite or fascicled leaves and very inconspicuous flowers.

Sub-Kingdom II. **Cryptogamic** or **Flowerless** Plants. Plants not provided with stamens and ovules as in Phanerogams. Reproductive organs are minute spores contained in sporangia; no seeds formed.

Phylum III. **Pteridophyta** (Fern-like plants). Plants with true leaves, roots, and vascular tissue as in Flowering Plants.

**Filices.** Ferns. Plants usually with underground stems (creeping or short thick root-stocks). Leaves (fronds) large, usually compound, bearing the sporangia on the under side.

**Equisetaceæ.** Horse-tails. Main stems deep underground, sending up aerial shoots either bearing whorls of green branches with minute scale-like whorled leaves, or simple, colourless and terminated by a cone of whorled scales bearing several sporangia on their lower surfaces.

**Lycopodiaceæ.** Clubmosses. Leaves small, but larger than in horse-tails, spirally arranged or scattered, not whorled. Sporangia singly on the upper sides of the cone scales.

**Selaginellaceæ.** Shoots flat; leaves generally in two sets, dorsal, small, adpressed to stem, ventral outstanding. Cones like those of Lycopodiaceæ. Spores of 2 kinds, megaspores and microspores, in separate sporangia.

#### NOTE.

It should be borne in mind by students that many plants are very variable, and that sometimes the commonest form in Britain is not typical of the plant as known on the Continent; and especially is this the case in the Mediterranean region, where physical conditions are so different. Moreover, it is well known that the habitats of certain species are by no means the same in every country where they grow, though in most cases there is a general similarity. Many of the British plants mentioned in this book are described from French specimens. We may, however, find that several plants known by the same name in England and on the Continent of Europe are in reality different species.



## CLASS I. DICOTYLEDONS.

### Division I. POLYPETALÆ.

#### Sub-Division I. THALAMIFLORÆ.

#### RANUNCULACÆ.

- Tribe I. CLEMATIDÆ. Sepals valvate. Shrubs with opposite leaves.  
 Petals 0. Sepals petaloid.....CLEMATIS.
- Tribe II. ANEMONÆ. Sepals imbricate. Achenes with 1 pendulous seed.  
 Involucre 0. Sepals 4-5, petaloid. Petals 0.....THALICTRUM.  
 Involucre of 3 leaves. Sepals 4-20, petaloid. Petals 0 .....ANEMONE.  
 Involucre 0. Sepals 5-8, petaloid. Petals 5-16, conspicuous .....ADONIS.
- Tribe III. RANUNCULÆ. Sepals imbricate. Achenes with 1 ascending seed.  
 Beak of carpel 5-6 times its length.....CERATOCEPHALUS.  
 Beak of carpel not longer than it .....RANUNCULUS.
- Tribe IV. HELLEBOREÆ. Sepals imbricate. Follicles many seeded except  
 in *Actæa*.

#### \* Flowers regular.

- Sepals petaloid. Petals 0 .....CALTHA.  
 Sepals petaloid, deciduous. Petals small, entire.....TROLLIUS.  
 Sepals petaloid, persistent. Petals small, 2 lipped.....HELLEBORUS.  
 Sepals petaloid, deciduous. Petals small, 2 lipped.....ERANTHIS.  
 Sepals herbaceous. Petals large, red .....PEONEA.  
 Sepals petaloid, deciduous, pink. Petals small, 2 lipped .....GARIDELLA.  
 Sepals 5, petaloid, deciduous. Petals small, 2 lipped .....NIGELLA.  
 Sepals 5-6, petaloid. Petals large, spurred .....AQUILEGIA.

#### \*\* Flowers irregular.

- Sepals many, the dorsal one spurred.....DELPHINIUM.  
 Sepals many, the dorsal one arched and hooded.....ACONITUM.  
 \*\*\* Flowers nearly regular. Fruit a berry .....ACTÆA.

#### CLEMATIS L.

**C. Vitalba L.** Old Man's Beard. Stem climbing, angular. Leaves pinnate; leaflets ovate-lanceolate, acuminate, slightly cordate at base, incisodentate. Flowers greenish-white. Awns feathery, 1 inch long.  
 Hedges and thickets, common. June, July.

**C. Flammula L.** (Plate IV). Stem climbing. Leaves bipinnate; leaflets almost linear, entire. Sepals glabrous within, tomentose at borders. Flowers white, in a loose panicle, scented. Awns feathery, short. A variable plant.  
 Hedges, thickets, and waste places on the littoral, and on some of the hills to over 800 m. June-August.

#### THALICTRUM L. MEADOW-RUE.

**T. minus L.** A most variable species with 8 or 9 subspecies and varieties in the Var. The sub-species are **T. majus**, *Jacq.*; **T. expansum**, *Ford.*; **T. montanum**, *Wallr.*; **T. silvaticum**, *K.*, and **T. ambigens**, *Ford.* Stems







1



2



3



4

PLATE IV.

1. Clematis Flammula.  
3. Anemone stellata.

2. Adonis autumnalis.  
4. Anemone coronaria var. phoenicea.

stoloniferous, from 1 to 3 feet high, flexuous, furrowed. Leaves large, biternate; leaflets rather large, glaucous below. Flowers yellow, pendent, in branched leafy panicles. Carpels oval, with longitudinal ribs.

Mountain woods and rocky places in the hills, but more especially in the sub-Alpine region. May-July.

**T. mediterraneum** *Ford.* = **T. flavum** var. **angustifolium** *G. G.* Stem about 3 feet high, hollow. Leaves tripinnate, slightly glandular; upper ones with linear, entire leaflets, lower leaflets oblong, pale green below. Auricles narrower than the sheath. Flowers in a rather dense yellow panicle. Carpels sessile, suborbicular.

Damp meadows and sides of ditches in the littoral. May, June.

**T. aquilegifolium** *L.* grows in shady places in the mountain and chestnut region of les Alpes-Marit. The flowers are pink.

### ANEMONE L.

**A. nemorosa** *L.* Wood Anemone. Rhizome horizontal, nearly black, with 2 or 3 biternate leaves at the extremity and a single flower-stalk 3 to 9 inches high, with involucrel leaves at about two-thirds of its height. Sepals 6, white, often pinkish or bluish outside. Carpels downy, long pointed but not feathery. The flowers soon fade.

Recorded by Ardoino from mountain woods in the Maritime Alps, April, but doubted by Burnat. It has, however, been seen a few times above San Remo.

**A. ranunculoides** *L.* with yellow flowers, is rarely found below 1000 m. in the Maritime Alps.

**A. trifolia** *L.* Radical leaves usually wanting at time of flowering. Involucrel bracts 3, petioled, with broadly lanceolate, serrated segments. Flowers solitary. Sepals usually 6, oblong-lanceolate, glabrous beneath, white. Anthers nearly white.

Mountain woods, pastures, and chestnut groves in Liguria; abundant in the mountain region behind Bordighera, formerly descending the banks of the Nervia almost to the sea. According to Moggridge it replaces *A. nemorosa* on the littoral from San Remo to Genoa. March-May.

**A. coronaria** *L.* (Plate IV). Leaves tripinnate, with narrow segments; involucrel leaflets sessile, lacinate. Flowers solitary, large and handsome, with 5 or 6 oval sepals. Carpels woolly.

Frequent in vineyards and olive groves on the littoral from Toulon to San Remo, and occasionally reaching 400 m. February-April.

There are several varieties in both Departments, of which the following are the chief:—

Var.  $\alpha$  **cyanea** *Ard.* = **A. cyanea** *Risso* = **A. coronarioides** *Henry*, with light blue flowers.

Var.  $\beta$  **coccinea** *Burn.* = **A. coccinea** *Ford.* = **A. coronaria** var. **phœnicia** *Ard.*, with scarlet flowers (Plate IV).

Var.  $\gamma$  **rosea** *Henry*, with pink flowers.

Var.  $\delta$  **ventreana** *Henry*, with yellowish-white flowers, streaked with red at the base of the sepals.

Var.  $\epsilon$  **purpurea** *Ard.* with purple flowers.

**A. stellata** *Lamk.* (Plate IV), **A. hortensis** *L.* var. **stellata** *G. G.* Leaves palmate, with toothed and serrated cuneiform lobes. Involucrel leaflets sessile, either entire or slightly cut. Carpels woolly. Flowers solitary, 2 in. across red-purple, deep pink, mauve or rarely white, often bluish beneath, star-shaped, and composed of 12-15 narrow sepals.

Woods, fields, under olives and in broken ground, very common along the French Riviera. February-April. In 1913 the first blossoms near Hyères appeared the second week in January.



**A. pavonina** *De Not.* = **A. hortensis** var. **pavonina** *Ard.* = vars. **fulgens** and **pavonina** *Gren. et Godr.* Flowers large, with 5-15 brilliant red sepals, with a yellow centre, but more commonly the flowers are double with an indefinite number of sepals, the outer ones being greenish.

On terraces and cultivated ground on the littoral. Possibly an artificial hybrid only. February-April.

**A. palmata** *L.* (Plate I). Leaves palmate, suborbicular, with 3-5 obtuse lobes, not deeply cut but toothed, often purplish beneath. Involucral bracts sessile, with 3-5 linear-lanceolate lobes. Flowers yellow, the size and colour of the Lesser Celandine, solitary, with 8-12 obtuse sepals. Carpels woolly with glabrous beak.

Borders of dry woods and clearings, rare. March-April. In a few places near Hyères, La Londe and Bormes.

**A. Hepatica** *L.* = **Hepatica triloba** *Chaix.* Leaves leathery, with 3 entire rounded lobes, often purplish beneath, on long petioles. Involucre immediately below the flower, of 3 entire, sessile bracts resembling a calyx. Flower solitary, blue, more rarely rose or white.

Woods and shady places in the mountain and sub-Alpine regions. February-June, according to situation. It grows on limestone woods at Montrioux above Toulon, and elsewhere in the Var; it descends also to shady places near Nice, Menton, Ventimiglia, etc., and extends to at least 1600 m. in the Maritime and Ligurian Alps.

#### ADONIS *L.* (PHEASANT'S EYE).

**A. autumnalis** *L.* (Plate IV). Annual. Stem erect, branched, very leafy. Leaves decomposed; segments small, linear; sepals spreading. Petals deep scarlet with a black spot at base, rather longer than the dark purple sepals. Head of reticulated achenes somewhat elongated.

Cultivated fields and waste places. April-June.

**A. æstivalis** *L.* Annual. Differs from the last chiefly in the lighter red or rarely yellow flowers with 5-10 petals, yellow glabrous calyx, and the achenes with a sharp tooth on the rim and in the obliquely ascending beak.

In crops near Menton, Gourdon, etc. May-June.

**A. flammea** *Jacq.* Annual. Flowers bright scarlet. Petals 3-6. Sepals pubescent, greenish. Fruiting spike, rather loose, elongated. Achenes with straight blackish beak and blunt tooth close to the beak.

Crops and cultivated fields, but not on the littoral itself. May-July.

#### CERATOCEPHALUS *Mœnch.*

**C. falcatus** *Persoon* = **Ranunculus falcatus** *L.* A small bushy annual 2-4 in. high. Leaves radical, digitate, divided into linear segments, on long stalks. Sepals and upper part of peduncles covered with long silky hairs. Petals pale yellow, nearly twice length of sepals. Carpels with 2 protuberances at base, ending in a long beak curved like a horn, and arranged in an oval spike.

Cultivated fields. March-May.

#### RANUNCULUS *L.*

SECTION I. **Batrachium.** Marsh or aquatic plants. Flowers white, with yellow basal glands, proterandrous. Leaves often submerged and multifid. Peduncles usually leaf-opposed, 1-fid. Achenes transversely wrinkled.

**R. heterophyllus** *Fries.* Segments of submerged leaves spreading in all directions; peduncles barely exceeding the leaves. Floating leaves 1 in. in diameter, from orbicular to reniform, 3-5 lobed. Flowers  $\frac{1}{2}$ -1 in. diameter; petals obovate, longer than sepals. Stamens numerous. Achenes very variable in pubescence and sometimes glabrous.

Ditches and stagnant water. April-July.



The following varieties or forms are recorded from Fréjus in the Var :—

Var. *submersus* G.G. = *R. aquatilis* var. *capillaceus* Coss. et G. ;  
*R. peltatus* Schrank = *R. aquatilis* var. *heterophyllus* Bor.

*R. trichophyllus* Chaix = *R. aquatilis* L. part. Submerged leaves usually sessile, black and rigid ; peduncles stout, shorter than leaves ; floating leaves (if any) 3 lobed, 2-3-lobotomously multifid, stipules large, rounded. Peduncles of floating leaves shorter than the others.

Ponds, marshes, and streams. April-May. Mr. Bicknell records *R. trichophyllus* from the Roja Valley near Ventimiglia, and Ardoino did so from the R. Var.

The following varieties are recorded from the Var by Albert and Jahandiez :—

*R. Godroni* Gren. Hyères.

*R. Drouetii* F. Schultz. Hyères, Toulon, La Garde.

*R. britannicus* R. et Fouc. Hyères.

*R. lutulentus* Perr. et Song. Roquebrune.

*R. circinatus* Sibth. = *R. divaricatus* Schrank. No floating leaves. Submerged leaves small, sessile, segments in one plane, rigid ; peduncles much longer than the leaves ; flowers  $\frac{3}{4}$  in. diameter ; petals obovate, twice length of sepals. Receptacle hispid. Achenes compressed. The most distinct and uniform species of this section, growing in pools and streams and flowering in May and June, but very little known in the South. Albert recorded it from Châteaudouble in the Var.

SECTION 2. *Ficaria* DC. Leaves chiefly radical, entire. Sepals 3-5. Petals 8-12, yellow. Achenes small, not beaked.

*R. Ficaria* L. = *Ficaria ranunculoides* Roth. Lesser Celandine. Root-fibres stout, cylindric ; leaves cordate, obtusely angled or crenate, shining ; petiole thick, with dilated base. Peduncles stout, 1 flowered. Flowers bright yellow, glazed, about 1 in. in diameter. Head of achenes globose.

Damp, shady, waste places from the coast to the mountains. January-May.

Var. *calthæfolia* Burn. = *Ficaria grandiflora* Robert, which has larger flowers and leaves with overlapping lobes, is common near the coast.

Var. *bulbifera* Albert.

This variety has the leaves furnished with bulbils at their axils ; and was found by the late Mons. Albert at Ruès near Ampus (Var) in fields flooded in winter.

SECTION 3. Mostly terrestrial plants. Leaves radical or cauline. Flowers yellow.

\* *Leaves entire, sometimes slightly toothed.*

*R. ophioglossifolius* Vill. Lower leaves cordate-ovate, long petioled ; upper ones oblong-lanceolate. Stem hollow, 6-18 in. high, erect, branched. Flowers small, pale yellow, on long peduncles. Sepals glabrous. Carpels 20-30, compressed, finely granulate ; beak very short. Annual.

Ditches and marshes on the littoral. May, June.

*R. gramineus* L. Roots with thick fleshy fibres. Leaves linear-lanceolate, with many nerves, which when dead form a sort of matting at base of the stems. Petals yellow, large, obovate. Carpels ovate, reticulate, with very short beak. Plant 6-12 in. high.

Grassy hills and fields in both Departments ; e.g. above Grasse, Ampus, Châteaudouble. May, June.

*R. Lingua* L. Great Spear-wort. Stem 3-4 ft., hollow, erect. Leaves sessile, half amplexicaul, lanceolate, entire or toothed, 6-10 in. long. Flowers 2 in. diameter, handsome.

Marshes and ditches, very rare, June-July. At Tourves in the Var.

**\*\* Leaves divided ; sepals reflexed.**

**R. monspeliacus** *L.* Plant 2-3 ft. high, covered with soft hairs. Root leaves with long stems, tripartite, with obtuse, dentate crenate lobes. Stem leaves with linear or lanceolate lobes. Sepals finally reflexed and hairy. Petals pale yellow, large, loose. Carpels, smooth, round, with long beak rather deflexed. Rocky ground and borders of fields in the hill region. May.

**R. bulbosus** *L.* Bulbous Buttercup. Stem swollen at base, without runners, erect, hairy. Leaves tripartite, with lobed segments, variable. Peduncles furrowed. Sepals reflexed. Achenes compressed, margined, glabrous, with short hooked beak.

Meadows, woods, and cultivated places. April-June.

**R. velutinus** *Ten.* Plant 1-3 ft. high, hairy below. Leaves tripartite, with broad lobes. Peduncles glabrous. Sepals reflexed. Achenes compressed, strongly margined, glabrous, with very short straight beak. Flowers rather small. Damp meadows, marshes, and shady places under olives; local. May, June.

**R. macrophyllus** *Desf.* = **R. palustris** *G.G.* Stem 1-2 ft. high, hollow, branching, hairy below like the petioles. Leaves hairy, lower ones large, 5-partite, orbicular. Flowers rather large. Sepals reflexed and then spreading. Carpels compressed, keeled with short, almost straight beak.

Damp places. May, June. Ditches of the ramparts at Toulon and near La Crau (Var).

**R. Sardous** *Crantz* = **R. philanotis** *Retz.* Stem erect, 9-18 in. Leaves tripartite. Peduncles furrowed. Flowers small. Sepals reflexed. Achenes tubercled. An annual.

Damp fields, May-July. Common and variable in the Var. **R. trilobus** *Desf.* is a sub-species found at Hyères, La Seyne, Ampus, etc.

**R. parviflorus** *L.* Small-flowered Buttercup. Stem spreading, decumbent. Leaves orbicular or reniform, 3 lobed, segments toothed; lowest leaves often entire; upper with linear lobes. Peduncles furrowed. Flowers pale yellow, very small. Achenes small. An annual.

Damp shady places and banks. April, June.

**R. scleratus** *L.* Celery-leaved Crowfoot. Annual, erect. Stem 1-2 ft., hollow. Leaves glabrous, 3 lobed, segments of lower lobes obtuse, of upper linear subentire. Sepals reflexed, hairy. Head of small glabrous achenes, oblong. Flowers  $\frac{1}{2}$  in. diameter.

Recorded by Ardoino from ditches and marshes by the R. Var near Nice. Rare in the South of France. May-August.

**\*\*\* Leaves divided ; sepals spreading.**

**R. repens** *L.* Creeping Buttercup. Stem hairy, decumbent below with long runners. Leaves petioled, tripartite with cuneate, lobed, and toothed segments. Peduncles furrowed. Sepals spreading, hairy. Achenes compressed, glabrous; beak hooked. Flowers 1 in. in diameter.

Damp places and borders of ditches, common. April-June.

**R. acris** *L.* Upright Buttercup. Stem hairy, erect, without runners, 1-3 ft. Leaves usually all petioled, 3-7-partite, 5 angled in outline, uppermost sessile. Peduncles not furrowed. Sepals spreading, pubescent. Achenes compressed, style hooked. Flowers 1 in. diameter.

Meadows, etc., common. May-July.

**R. montanus** *Willd.* Grows in the mountain and sub-Alpine region of Alpes-Marit. Stem short, nearly simple; leaves palmatipartite.

**R. lanuginosus** *L.* The size of **R. acris**. Stems hollow, branched, densely woolly. Leaves hairy beneath; lower ones 5-partite with broadly obovate lobes, toothed; the upper ones tripartite with lanceolate lobes. Peduncles not furrowed. Sepals spreading, hairy. Receptacle glabrous. Carpels glabrous, with hooked beak nearly half length of carpel,

Shady places in the Var, in the forests of the Maures, Ste. Baume, etc. June, July.

**R. flabellatus** Desf. = **A. chærophyllus** DC. Root with fibrous tubercles. Leaves mostly radical, silky, tripartite with narrow segments. Peduncles glabrous. Stem erect, usually simple, bearing one or two large bright yellow flowers. Sepals spreading, pubescent. Carpels compressed, distinctly margined, with straight beak about half their length. A very variable species, especially in the Var.

Dry hills and sandy places. April-May.

**R. millefoliatus** Vahl. Root-stock similar to the last. Stem 6-12 in., thick, erect, pubescent. Leaves hairy, mostly radical tripinnate, with short lobes, narrow and acute. Peduncles thick. Flowers 1-2, large. Sepals spreading, glabrous. Carpels numerous, compressed, margined, with much-hooked beak. Dry uncultivated places, rare.

Plateau de Pouraques near Valloury above Solliès-Toucas in the Var. April-May. This is the only known station in France. In 1893 it was found on olive terraces above Bordighera.

**R. garganicus** Ten. (**R. Canuti** Coss.). Root-stock similar to the 2 last. Stem 6-12 in., slender, erect, pubescent. Leaves mostly radical, pubescent, irregularly bipinnate with linear obtuse lobes. Peduncles slender. Flowers 1-2, rather large. Carpels keeled, with almost straight beak, half the length of the carpel.

Dry uncultivated fields. Col du Braus and Valley of Peille in the Alpes-Marit., rare. April-June.

**R. muricatus** L. Annual. Stem 6-12 in. high, branched, glabrous, hollow. Leaves glabrous, with 3-5 crenate lobes, the upper leaves obovate. Peduncles furrowed. Carpels 6-15, large, broadly keeled, covered with spiny tubercles, and having a broad recurved beak. Flowers small, yellow. Sepals spreading, hairy.

Damp and cultivated places in the littoral region. April-June.

**R. arvensis** L. Corn Crowfoot. Annual. Stem about 1 ft. high, branched. Leaves ternate, the upper ones with linear segments. Peduncles glabrous. Carpels 4-8, large, bristly with hooked spines. Flowers small, pale yellow.

In the crops. Common on the littoral. May-June.

### CALTHA L.

**C. palustris** L. Marsh Marigold. Leaves orbicular-reniform crenate, glabrous, shining, longly petioled, fleshy. Stipules very large, membranous, entire in bud and enclosing the young leaf. Flowers large, bright yellow, handsome. Sepals 5 or more, petaloid. Petals 0. Carpels numerous, many seeded.

Mountain and sub-Alpine district of the Maritime Alps. April-May.

### TROLLIUS L.

**T. europæus** L. Globe-flower. Leaves alternate, palmately lobed; root leaves petioled, suborbicular, 5-partite, segments cuneate lobed; stem leaves smaller, sessile. Flowers, rather pale yellow, large, globular in form. Sepals 5-15 petaloid, orbicular. Petals 5-15, small, narrow, claw very short. Stamens short. Follicles transversely wrinkled, keeled, beaked. Seeds black, dotted.

Pastures in the sub-Alpine and montane region of the Maritime and Ligurian Alps. June-July.

### HELLEBORUS L.

**H. niger** L. Christmas rose. Leaves all radical, glabrous, large, leathery, stalked, pedate, 7-9 cleft; divisions undivided or 2-3 cleft, toothed. Flowers nodding, handsome, white or rose-tinted, ultimately pale green. Petals and stamens yellow. Sepals petaloid. Follicle with long beak.

Recorded by Ardoino from mountain woods, very rare, at Bajardo above San Remo, January-March, but excluded by Burnat and Bicknell,



**H. viridis** L. Green Hellebore. Plant 1-2 ft. high. Radical leaves large, on long stalks, divided into 7-11 oblong, acute, toothed segments 3-4 in. long, the central ones free, the lateral ones connected at the base. Flowers 2-4, drooping, greenish.

Mountain woods in the Maritime Alps, local. Tenda district, Monte Ceppo, etc. March, April.

**H. fœtidus** L. Stinking Hellebore. Plant at least 2 ft. high, robust, with perennial leafy stems. Lower leaves not all radical, and forming a larger and thicker tuft than in the last species. Segments narrower, less toothed and more shining. Flowers in a close panicle, drooping, pale green tinged with purple.

Stony places, borders of woods, etc., in the mountain region, descending to the littoral in both Departments. February, March.

#### ERANTHIS *Salisb.*

**E. hiemalis** *Salisb.* Winter Aconite. Leaves radical, glabrous, shining, longly petioled, orbicular but deeply cut into segments, appearing after the flowers. Flowers yellow, regular; sepals petaloid, deciduous, 5-8. Petals small, 2 lipped. Follicles 5-8, free divergent, with a beak half their length.

Damp woods; very rare. February, March. Recorded by Ardoino from north of Nice and Castellane, but doubted by Burnat in "Fl. des Alpes Marit."

#### PÆONIA L.

**P. peregrina** Mill. Stem 1-2 ft. high. Leaves biternate, green above, glaucous and pubescent below. Petals rose coloured, very large. Flowers regular, handsome. Follicles 2-3, spreading at maturity.

Mountain pastures from 800 to 1300 m.; above Mentone, Nice, Grasse, St. Auban, etc., and rather higher in the Ligurian Alps, e.g. Monte Toraggio. May.

In the Var it is represented by the variety **P. paradoxa** *Anders.*, which is found in mountain woods, near Ampus, Vêrignon, etc., from April to June.

#### GARIDELLA L.

**G. nigellastrum** L. = **Nigella Garidella** *Baillon.* Annual stem about a foot high, slender, angular. Leaves multifid, with very narrow segments. Flowers small, white or reddish, solitary, long peduncled. Follicles 2-3, united in their lower half, beak short.

Hilly fields, among the olives, etc.; rare. May, June. Formerly at Nice and Cannes, but excluded by Burnat; Toulon, Cap Brun, Carqueiranne, Seillans.

#### NIGELLA L. LOVE-IN-A-MIST.

**N. Damascena** L. (Plate I). Annual. Stem a foot or more high, erect, angular. Leaves multifid with linear acute segments. Involucre like the leaves. Flowers blue. Sepals ovate lanceolate, petaloid deciduous. Follicles 5, glabrous, united at the summit and forming a globular capsule.

Fields and dry hills, common. May-June.

#### AQUILEGIA L. COLUMBINE.

**A. vulgaris** L. Common Columbine. Stem 1-3 ft. high, pubescent, branched above. Leaves biternate, whose incisions don't reach the middle; lower leaves with long petioles and broad lobes; upper leaves sessile. Flowers irregular, bluish purple, rose, white, or dark violet (**A. atrata**). Stamens longer than petals.

Sub-Alpine and mountain region. June-July.

**A. Reuteri** *Boiss.* Stem 1-2 ft. high, with 1-5 flowers, viscous. Leaves small, biternate; leaflets deeply incised; upper leaves with 3-7 linear lobes or entire. Flowers bright blue. Spur strongly curved in. Follicles small.

Woods and rocky places in the mountains, rare. June, July. Aiguines, in the Margès escarpments, above Menton, Val Casterino near Tenda, Roubion, St. Martin Lantosque. Not uncommon on mountains behind Bordighera as on Testa d'Alpe. Usually above 1000 m.



**DELPHINIUM L. LARKSPUR.**

\* *One ovary ; petals united.*

**D. Consolida L.** Annual. Almost glabrous. Stem slender, 8-18 in., with spreading branches. Leaves multifid, with linear segments; bracts simple and entire, linear. Spike short, few-flowered. Flowers deep blue, with long spur. Follicles glabrous. Seeds black.

Crops and fields. May-July. Occasional in both Departments.

**D. pubescens DC.** Annual, pubescent. Leaves multifid, with linear segments. Bracts simple, 4 times shorter than the peduncle. Spike loose. Flowers pale blue. Follicles obtuse, pubescent. Seeds greyish.

Among crops. June, July. Near Lantosque, Fréjus, Bandol, etc.

**D. Ajacis L.** Annual, pubescent. Stem 10-18 in., slender. Leaves multifid, lobes linear. Upper leaves sessile, lower petioled. Flowers blue, white, or pink. Petals 2. Follicles acute, pubescent.

In the crops. May-July.

\*\* *3-5 ovaries ; petals free.*

**D. peregrinum L.** Annual, finely pubescent. Lower leaves multifid, with linear segments, upper ones entire. Follicles 3. Petals free, glabrous. Flowers blue or white.

Fields and hills; rare. June-July. Toulon, Saint Cyr. Ardoino's record from Nice is excluded by Burnat.

**D. fissum Waldst. et Kit.** Glabrous or hairy, 2-3 ft. high, robust. Leaves cut into 5-7 linear lobes, trifid. Petioles dilated into a sheath at the base. Flowers bright blue, at first often greenish, in long spikes, spur long and pointed. Petals bifid, the 2 inferior downy at the base. Follicles 3-5.

Rocky and shrubby places in the mountains; rare. June, July. San Dalmazzo di Tenda; La Sainte Baume, Aiguines.

**D. Requiinii DC.** Annual, reaching a yard high. Leaves palmate, with 5-9 incised lobes. Bracts inserted below the middle of the erect pedicels. Flowers blue, in long pubescent spikes. Follicles 3-5. Spur acute, curved.

Rocks and thickets, very rare. May-June. Only in France in the Isle of Porquerolles, where it grows on the Mèdes rocks, and also rarely in woody places. Also found in Corsica, Sardinia, and Balearic Isles.

**D. Staphisagria L.** Annual, pubescent in all its parts. Stem reaching a yard high. Leaves palmate, with 5-9 broad incised lobes, or entire in the upper leaves. Flowers blue, large, in long spikes, pubescent. Spur very short, obtuse, bifid.

Borders of fields and waste places in the Var. May, June. Very local. Hyères, north of Mont Coudon near Toulon, La Farlède, Bormes, etc.

**ACONITUM L.**

**A. Lycoctonum L.** Stem attaining 3 ft., pubescent, branched. Leaves deeply palmately cut, with 5-7 broadly wedge-shaped segments. Flowers pale yellow, in dense oval, elongated spikes. Sepals pubescent, soon falling. Hood much higher than broad. Follicles 3; seeds striated on all sides.

Mountain and sub-Alpine woods in the Maritime Alps and on Monte Ceppo. June, July.

**L. Napellus L.** Monkshood. Tubers turnip-like, covered with fibres. Stem erect, 2-5 ft. high, densely leafy above. Leaves shiny, dark green, palmate, 5-7 cleft. Flowers dark violet, in a dense long spike. Follicles glabrous, parallel (not spreading) when ripe.

Woods in the sub-Alpine and mountain regions of the Maritime Alps. July. These 2 species scarcely come within our district.

## ACTÆA L.

**A. spicata** L. Baneberry. Stem 1-2 ft. high, glabrous. Leaves large, thin, 2-3-ternate, with oval segments, incised-dentate. Flowers white, small, in a short terminal raceme. Corolla regular, with 4 petaloid sepals easily falling. Petals 4, almost invisible. Berries ovoid, green and finally black and shining in clusters.

Sub-Alpine woods and stony places in the Maritime and Ligurian Alps. May-July. Mt. Mulace above Menton, Tenda, etc., but scarcely within the limits of this book.

## BERBERIDACEÆ.

## BERBERIS L. BARBERRY.

Spiny shrubs, wood yellow. Leaves spinous-toothed. Flowers racemed, regular, solitary or fascicled. Sepals 8-9. Petals 6, in 2 series with 2 basal honey glands. Stamens 6. Berry 1-2 seeded.

**B. vulgaris** L. Common Barberry. Shrub, 4-8 ft. high, furnished with spreading spines. Leaves obovate, spinous-serrate, shortly petioled on the woody shoots; or reduced to 3-7 forked spines jointed on a short sheath, with fascicles of leaves in their axils. Flowers pale yellow in hanging racemes. Stamens irritable, springing forward when touched at the base. Berry acid,  $\frac{1}{2}$  in. long, oblong, compressed, orange, and then bright red.

Hedges, etc. April-May. Rare on the littoral, commoner on the mountains.

## NYMPHÆACEÆ.

## NYMPHÆA L.

Flowers white (in European species). Sepals 4, adnate to the base of the disk.

**N. alba** L. = *Castalia alba* Greene. White Water-lily. Leaves floating, orbicular, with cordate base, entire; petiole very long. Sepals linear-oblong, green outside. Petals oblong, obtuse. Fruit globose, with 15-20 stigmatic rays. Deep stagnant water, rare. June-August.

## NUPHAR Sibth. et Smith.

Flowers yellow, globose. Sepals 5-6, concave. Petals many, small. Carpels many, forming a many-celled ovary. Stigma peltate, rayed.

**N. luteum** Sibth. et Smith = *Nymphaea lutea* L. Yellow water-lily. Leaves orbicular, with deeply 2-lobed base; lobes usually contiguous. Submerged leaves membranous; floating leaves leathery. Flowers fragrant, yellow. Petals 18-20, thickly coriaceous. Stigma 10-30 rayed. Berry beaked.

Stagnant water and slow rivers. June-September. Le Pradet and R. Caramy near Cabasse in the Var.

## PAPAVERACEÆ.

\* Capsule dehiscing by pores.

Stigmas 4 or more, subsessile, forming a radiating disk.....PAPAVER.

\*\* Capsule dehiscing nearly to the base by valves.

Ovary more or less 2 celled. Flower yellow.....GLAUCIUM.

Ovary 1 celled. Seeds not crested. Flower violet.....ROEMERIA.

Ovary 1 celled. Seeds crested. Flower yellow.....CHELIDONIUM.

Corolla irregular. Ovary divided transversely into numerous 1 seeded partitions.....HYPECOUM.

## PAPAVER L. POPPY (all annual).

**P. setigerum** DC. (Plate 1). This is a hispid variety of *P. somniferum* L., the Opium Poppy, which is cultivated and subspontaneous here and there,



PLATE V.

1. *Moricandia arvensis*. 2. *Diplotaxis eruroides*.  
 3. *Alyssum maritimum*. 4. *Hypecoum procumbens*. 5. *Fumaria spicata*.







Leaves simply toothed or incised, glaucous, hispid. Capsule obovate, glabrous. Flowers large, pale mauve or white.

Frequent in waste places on the littoral. May-June.

**P. Rhœas** L. Common Poppy. Leaves 1-2 pinnatifid. Peduncles with spreading or adpressed hairs. Capsule subglobose, glabrous; stigma with 8-12 rays. Flowers large, scarlet.

Common in cultivated fields. May-June.

**P. dubium** L. Long smooth-headed Poppy. Leaves 1-2 pinnatifid. Hairs of peduncles adpressed. Pairs of petals unequal. Capsule sessile, oblong, glabrous. Stigma 6-12 rayed. Anthers dull violet. Flowers red.

Cultivated fields, common. May-June.

**P. pinnatifidum** Moris. (Plate I). Differs from the last by its simply incised leaves, yellow anthers, and longer narrower capsule.

It grows with **P. dubium** at Menton, Nice, etc., and flowers in May.

**P. hybridum** L. = **P. hispidum** Lam. Round prickly-headed Poppy. Leaves 2-3 pinnatifid with acute lobes, sparingly hispid, except beneath where the segments and prominent rib of the petiole is clothed with bristly hairs. Capsule globose, sessile, bristly; stigma convex, rays 4-8. Flowers rather small pale purplish red or wine coloured with black disk. Petals broadly ovate 18-20 mm. long. The anthers are pale blue before the flower opens and turn slaty.

Cultivated fields. April-May.

See notes on the colour of this plant by H. S. T. and G. C. Druce in "Journal of Botany," 1913, pp. 172-225.

**P. Argemone** L. Long prickly-headed Poppy. Leaves 2 pinnatifid. Capsules narrow oblong, contracted at base, usually hispid; stigma convex, rays 4-6. Habit of the last but weaker; flowers redder and petals narrower, and capsule clavate.

Cultivated fields on the littoral of the Var, but chiefly in the mountain region of Alpes-Marit. April-June.

#### GLAUCIUM Gaertn.

**G. flavum** Crantz = **G. luteum** Scop. Yellow horned poppy. Leaves glaucous, lyrate-pinnatifid, rather thick, rough with stout hairs, peduncles glabrous, short. Flowers very large, golden yellow. Pod curved, sometimes a foot long, glabrous. A biennial.

Sea sands and stony places on the littoral. May-August.

**G. corniculatum** Curt. An annual hispid species. Flowers smaller, brilliant red or rarely orange-red; capsule hispid, straight. Leaves profoundly bipinnatifid, lyrate.

Cultivated fields and waste places in the Var as at Six Fours, Carqueiranne, etc. April-June.

#### ROEMERIA DC.

**R. violacea** Medic. An annual plant with yellow sap. Leaves 2-3 pinnatifid, with almost linear divisions, ending in a mucro. Flowers dark violet, large, solitary, shortly peduncled. Petals crinkled in the bud. Capsule linear, hispid, 1 celled, but 2-4 valved.

Fields and hillocks in the Var; occasional. May, June.

#### CHELIDONIUM L.

**C. majus** L. Greater Celandine. Leaves 1-2 pinnate, glaucous below, segments ovate, toothed, lobed, or lacinate. Stem 1-2 ft. high, brittle, hairy, leafy. Juice yellow. Flowers yellow, 1 in. in diameter, in loose umbels. Capsule readily debiscing, valves torulose.

Hedges, waste-places, etc. April-August.

## HYPECOUM L.

**H. procumbens** L. (Plate V). Leaves bipinnatifid, with linear segments. Flowers small, yellow, irregular, in a cyme, 2 petals being smaller than the others; stem naked, more or less prostrate. Capsule sickle-shaped, divided transversely into many 1-seeded parts.

Fields and sandy places on the littoral. April, May.

## FUMARIACEÆ.

Fruit sub-globose, 1 seeded, indehiscent.....FUMARIA.

Fruit oval, 1 seeded, flattened, with thick rim, indehiscent.....PLATYCAPNOS.

Fruit a 2-valved capsule, many seeded, dehiscent.....CORYDALIS.

## FUMARIA L. FUMITORY (all annual).

(Kindly revised by Mr. H. W. Pugsley, B.A.)

**F. major** *Bad.* Leaves 2-3 pinnatisect, with oblong segments; sepals about a quarter the length of corolla. Corolla large, pink or red, dark crimson at tip, upper petal broadly winged, lower petal with broad, spreading margins. Fruit large, subtund-ovate, shortly apiculate, coarsely rugose when dry. Somewhat variable, but not rampant.

Fields and waste places on the littoral. February-May. Common about Hyères and Carqueiranne.

Mr. Pugsley tells me that fresh Spanish specimens of **F. agraria** *Lag.* (formerly considered more or less synonymous) are "not in the least like **F. major**—much less so than when both are dry. The fruit of **F. agraria** is much more compressed and distinctly beaked."

**F. capreolata** L. Ramping fumitory. Plant climbing by the twisting petioles. Leaf segments broad, flat. Sepals large, oval, about half as long as the corolla. Corolla large, white or dorsally purplish, dark crimson at tip, narrowly winged, lower petal with narrow erect margins. Fruit small, very obtuse, smooth when dry, borne on reflexed pedicels. Very variable and having several named varieties of which **F. speciosa** *Hammar* (= **F. speciosa** *Ford.*) has the corolla becoming entirely crimson and less laterally compressed than in the type.

Cultivated ground and waste places on the littoral. February-June.

**F. Bastardi** *Bor.* Rarely rampant, with oblong leaf segments. Sepals less than a third length of corolla. Corolla rather smaller than in **capreolata**, pink, inner petals only tipped with purple, except in var. **Gussonei**; lower petal with very narrow spreading margins. Fruit of moderate size, more or less obtuse, rugose when dry.

Cultivated fields and waste places on the littoral. February-May.

**F. vagans** *Ford.*, with small, subacute fruits, and **F. Gussonei** *Boiss.*, with dark tipped corolla, are varieties also found in the Var.

A plant first found at the Ile St. Marguerite (Lerins), off Cannes, by the late Mr. Townsend and described as **F. Loiseleurii** *Clav.* **F. Ieronensis** by Mons. Burnat in "Fl. des Alpes-Marit." is thought by Mr. Pugsley to be a distinct species. It has rather large pink flowers, with inner petals only tipped with purple, very small sepals and bracts, and pointed fruits which become black-spotted.

**F. Kraliki** *Ford.* = **F. anatolica** *Boiss.* This Eastern species, easily known by its small purplish flowers with very large sepals, and small fruits on reflexed pedicels, was found subsontaneous in the crops at Hyères by Shuttleworth. It has since been seen in similar conditions near Antibes and Marseilles.

**F. micrantha** *Lag.* = **F. densiflora** *DC.* Erect or diffuse, almost glaucous. Leaf segments narrow, nearly linear. Flowers rose or pinkish white with purplish tip, small, in dense heads; lower petal dilated at the apex. Sepals large, broader than corolla and half as long. Fruit of moderate size, nearly globose, with round top, rugose when dry.

Arable fields. April-June. Rare on the Riviera, as at Toulon and Château-double.

**F. officinalis** L. Common Fumitory. Diffuse. Leaf segments narrowly oblong, flat. Sepals ovate-lanceolate, one-third length of corolla. Corolla rather small, reddish or rose, with purplish tip, lower petal abruptly dilated at apex. Fruit usually broader than long, depressed, rugose when dry.

Cultivated fields, gardens, and waste places, common. March-July.

**F. Vaillantii** Lois. An erect, slender, glaucous much-branched species. Leaf segments distant, narrow, almost linear, flat. Flowers very small, pink, with purplish tip; lower petal abruptly dilated at apex. Sepals minute. Fruit small, nearly globose, rounded-obtuse above, rugose when dry. Bracts shorter than the pedicels (they are about as long in **parviflora**).

Arable fields, rare in the Var, as at Solliès-Toucas and La Farlède. Occasional in the mountain region behind Bordighera and San Remo. April-June.

The var. **Chavini** R. et Fouc. (**F. Chavini** Reut.), more robust, with more compound leaves and longer racemes of brighter flowers, has also been found.

**F. parviflora** Lamk. Diffuse. Leaf segments very narrow, linear, channelled, glaucous. Sepals minute. Corolla very small, broadly winged, white or pale rose, partially tipped with dark purple; lower petal apically abruptly dilated. Fruit small, subacute or apiculate, rugose when dry.

Sandy places and cultivated fields, common. March-May.

Those who require a detailed description of the plants of this perplexing genus should consult Mr. Pugsley's careful work on "The Genus *Fumaria* in Britain," originally published as a supplement to the "Journal of Botany," 1912. We understand he is now engaged in revising the whole genus.

#### PLATYCAPNOS Bernh.

**P. spicatus** Bernh. = **Fumaria spicata** L. (Plate V). A very distinct Fumitory; erect, often with many stems springing from the root. Leaf segments short, linear, glaucous. Flowers very small, bright pink except the green apex, in short oval, dense heads. Sepals lanceolate-acute, one-third length of corolla. Fruit oval, flattened, with thick rim.

Arable fields, local. March-June. Ardoino's record from Nice is excluded by Burnat. Locally common in the Var about Toulon, Carqueiranne, La Garde, La Farlède, Hyères, Fréjus, etc.

A variety with white and green corolla (var. **alboviridis** Reyn.) is found between La Seyne and Sanary.

#### CORYDALIS DC.

**C. solida** Swartz = **C. bulbosa** DC. Bulb solid. Stem simple, bearing 2-4 leafy bracts. Leaves twice tripinnate; segments wedge-shaped. Bracts herbaceous, digitate, rarely entire. Flowers purple, sometimes white, in terminal erect heads which are elongated after flowering. Spur elongated. Pedicels as long as the capsule.

Shady places in the lower mountains. April, May. La Sainte Baume, Forêt de Margès, Ampus, and probably in most of the woods in the north of the Var. Mountains above Menton, Grasse, etc.

#### CRUCIFERÆ.

A. Pods elongate (except sometimes in *Nasturtium*), dehiscing throughout their length, flat or turgid.

Tribe I. ARABIDEÆ. Seeds usually 1 seriate; radicle accumbent. Flowers white, yellow, or lilac.

\* *Stigmas erect or decurrent on the style* ..... MATTHIOLA.

\*\* *Stigmas small, simple, terminal.*

Lateral sepals saccate. Hairs forked ..... CHEIRANTHUS.

Pods terete, valves turgid. Seeds minute, 2 seriate ..... NASTURTIIUM



- Pods 4 angled. Seeds oblong.....BARBAREA.  
 Pods flat, valves not elastic, 1 nerved.....ARABIS.  
 Pods flat, valves elastic. Funicle filiform.....CARDAMINE.  
 Pods flat, valves elastic. Funicle dilated.....DENTARIA.
- Tribe II. SISYMBRIÆ. Seeds usually 1 seriate; radicle incumbent, straight.  
 Flowers white, yellow, or lilac.  
 Stigma obtuse. Glabrous or with spreading hairs.....SISYMBRIUM.  
 Stigma obtuse. Hairs adpressed, 2-3 furcate.....ERYSIMUM.  
 Stigma decurrent on the style. Hairs spreading.....HESPERIS.  
 Stigma conical. Leaves entire.....MALCOMIA.
- Tribe III. BRASSICÆ. Seeds 1-2 seriate; radicle incumbent, longitudinally folded or very concave. Flowers yellow, or white, or purple.  
 Pods terete or angled. Seeds 1 seriate.....BRASSICA.  
 Pods compressed. Seeds 2 seriate, compressed.....DIPLTAXIS.  
 Pods nearly cylindrical, slightly beaked. Seeds 1-seriate.....SINAPIS.  
 Pods terete. Seeds 2 seriate. Calyx spreading.....ERUCA.  
 Pods 4 angled. Seeds 2 seriate, winged. Calyx erect. Flowers violet  
 MORICANDIA.
- B. *Pods short (except sometimes in Draba), dehiscent throughout their length, broad, flat, or turgid, not compressed at right angles to the septum. Flowers white or yellow.*
- Tribe IV. ALYSSINEÆ. Seeds 2 seriate; radicle accumbent.  
 Petals entire. Pods oblong, flat, many seeded.....DRABA.  
 Petals 2 cleft. Pods oblong, flat, or turgid.....EROPHILA.  
 Petals entire. Pods circular, few seeded.....ALYSSUM.  
 Petals white. Pods obovate, 6 seeded. Style very short.....KERNERA.  
 Petals yellow. Pods obovate, several seeded. Style short.....CAMELINA.  
 Petals purple, entire. Pods very large, flat, strongly rimmed.....LUNARIA.  
 Petals yellow. Pods with flat margin, 1 celled, 1 seeded.....CLYPEOLA.
- Tribe V. CAMELINEÆ. Seeds 2 seriate; radicle incumbent.  
 Tall herbs, stem-leaves sessile, auricled. Pods obovate.....CAMELINA.
- C. *Pods short, dehiscent throughout their length (except in Coronopus), compressed at right angles to the septum, which is hence very narrow.*
- Tribe VI. LEPIDINEÆ. Cotyledons straight, incurved, or longitudinally folded, radicle incumbent. Flowers white.  
 Pods dehiscent, many seeded.....CAPSELLA.  
 Pods didymous, indehiscent, 2 seeded.....CORONOPUS.  
 Pods dehiscent, 2-4 seeded.....LEPIDIUM.  
 Pods oval, notched, keeled and broadly winged. Flowers mauve, in a corymb  
 AETHIONEMA.
- Tribe VII. THLASPIDÆ. Cotyledons straight, radicle accumbent. Pods on horizontal pedicels. Flowers white, yellow, or mauve.  
 Pods notched. Petals equal. Filaments without scales.....THLASPI.  
 Pods notched. Petals very unequal. Filaments without scales.....IBERIS.  
 Pods oblong. Petals unequal. Filaments with basal scales.....TEESDALIA.  
 Pods oblong. Petals equal. Filaments without scales.....HUTCHINSIA.  
 Pods of 2 round lobes, or disks, each with 1 seed. Flowers yellow  
 BISCUTELLA.
- D. *Pods indehiscent, or with very short valves which cover a few of the seeds only.*
- Tribe VIII. ISATIDÆ. Pods indehiscent, 1 celled, 1 seeded.  
 Pods tongue-shaped, compressed, bordered, pendulous.....ISATIS.  
 Pods nearly globose. Radicle incumbent.....NESLIA.  
 Pods turgid, leathery. The 4 longer filaments winged.....CALEPINA.  
 Pods tetragonous, crested. Cells 4, in pairs. Cotyledons spiral.....BUNIAS.  
 Pods nearly triangular, with 2 empty cells above a fertile one.  
 Cotyledons channelled. Seed pendulous.....MYAGRUM.



Tribe IX. CAKILINEÆ. Pods transversely 2 jointed, lower joint indehiscent, seedless or not, or 2 valved and 2 or more seeded; upper joint indehiscent, 1-2 celled.

Lower joint 2 edged, 1 celled; upper ensiform, 1 seeded .....CAKILE.  
Both joints with 1 seed. Seeds as in *Cakile*. Cotyledons folded .....RAPISTRUM.

Tribe X. RAPHANEÆ. Pods elongate, 1 celled, many seeded, or indehiscent, or jointed, the 1-seeded joints being indehiscent .....RAPHANUS.

### MATTHIOLA R. Br. Stock.

**M. incana** R. Br. Common Stock. Shrubby, erect, hoary, 1-2½ ft.; leaves oblong-lanceolate, entire or obscurely toothed. Flowers purple, violet, or white. Pods 2-4 in. long, seeds orbicular, winged. Peduncle equalling the sepals.

Maritime rocks and old walls. April-May. Menton, Monaco, Ile Ste. Marguerite, Fréjus, Ile de Port-Cros and Porquerolles, Forte Ste. Marguerite near La Garde; presqu'île de Giens, etc. Several specimens with fasciated stems 2-2¾ in. wide appeared on the cliff at Beau Rivage, Var, in the spring of 1913.

**M. annua** Sweet. = **Cheiranthus annuus** L. "Stem herbaceous, erect, branched. Leaves lanceolate, obtuse, hoary. Pods cylindrical, without glands. Petals obovate." Perhaps only an annual form of *M. incana*.

Maritime banks. May, June. Rocks at the Brégançon fort near Bormes; Ile de Port-Cros.

**M. sinuata** R. Br. Herbaceous, diffuse, woolly or downy, 1-2 ft. Leaves linear-oblong, lower sinuate-toothed, petioled. Pods 3-4 in. muricate, glandular. Flowers smaller, pale lilac. Peduncle much shorter than sepals. A biennial.

Sea sands. April-June. Menton, Cannes, Lavandou, Iles d'Hyères, Plage de Giens, Plage d'Hyères, etc.

**M. tristis** R. Br. Herbaceous stem; 6-12 in., leafy below. Leaves linear, or with 1-2 small spreading lobes; peduncle much shorter than sepals. Pods not glandular. Flowers rusty, livid, or reddish.

Rocks and stony places; very local. May, June. Ferrion mountain above Nice, Aiguines, Grand Plan de Canjuès, Villehaute near Ampus.

**M. tricuspidata** R. Br. Annual, 6-12 in. high, stem herbaceous, branched. Leaves sinuate or pinnatifid, lobes rounded, oval. Flowers mauve or lilac, rarely white. Sepals much longer than the pedicel. Stigma ending in 3 points. Pods spreading.

Maritime sands; rare. May-June. Hyères, Plage de Giens, and Isthmus des Pesquiers.

### CHEIRANTHUS L.

**C. Cheiri** L. Wallflower. Shrubby, 1-2 ft. Leaves lanceolate, acute, entire, rather fleshy. Flowers fragrant, orange yellow or yellow. Plant covered with short adpressed hairs. Pods 1-2 in. long, 4 angled.

Walls, rocks, and ruins. March-May. Originally from Greece, but long naturalized here and there in both Departments.

### NASTURTIIUM R. Br.

**N. officinale** R. Br. = **Radicula officinalis** Groves. Watercress. Leaves pinnate, rather thick, often bronze-green; leaflets rounded, sinuate-toothed. Peduncles shorter than the short linear pods. Flowers white. Stem decumbent, rooting.

Streams, ditches, and springs. Common. May-August.

**N. asperum** Cosson. Leaves pinnatifid, with oblong lobes, obtuse. Peduncles shorter than the linear pods, which are rough-tubercled and spreading. Flowers small, yellow.

Damp places and fields flooded in winter; rare. May-June. Le Luc, Ampus, Plan d' Aups, la Faye de Mas near St. Auban.

**N. silvestre** *R. Br.* = **Radicula pinnata** *Maench.* Creeping yellow-cress. Leaves deeply pinnatifid, very variable; leaflets many, lanceolate, more or less cut, nearly equal. Petals bright yellow, twice as long as sepals. Pods linear, curved, pedicel very slender, about equal in length to the pod.

Damp places, sandy beds of rivers, etc. May-July. Toulon, Fréjus, Hyères, La Crau, Gapeau River, Antibes, Grasse.

**N. amphibium** *R. Br.* Leaves entire, toothed, or pinnatifid when submerged. Petals yellow, twice as long as sepals. Pods oblong, shorter than their pedicels. Flowers  $\frac{1}{4}$  in. diameter. Pods  $\frac{1}{4}$  in. long. Pedicels spreading or deflexed. Style slender. A stout plant.

Rivers and ditches, rare. June-July. St. Martin du Var, Toulon, Le Muy.

The hybrid  $\times$  **N. anceps** *DC.* = **N. silvestre**  $\times$  **amphibium** is recorded from Toulon and Hyères, growing with the parents. **N. palustre** *DC.* is recorded from Gonfaron (Var.)

### BARBAREA *R. Br.* WINTER-CRESS.

**B. vulgaris** *R. Br.* Yellow Rocket or Winter-green. Leaves toothed or pinnatifid at base, shining. Lower leaves pinnate, rarely pinnatifid, terminal leaflet largest, cordate; upper leaves sub-entire with amplexicaul auricled bases. Stem erect, rigid. Flowers small, bright yellow. Pods 1 in. long, broader than their slender pedicel. Very variable.

Road-sides and sides of streams, local. May, June.

**B. præcox** *R. Br.* Early Winter-green. Leaves shining, pinnatifid, segments narrow, root-leaves lyrate, with numerous lateral lobes, the terminal ones oval; stem-leaves amplexicaul and auricled. Petals three times as long as the sepals, pods long and distant, scarcely thicker than their short stout pedicels.

Cultivated fields and damp places. April, May. Very local. Bormes, Hyères, Roches de St. Jean, La Garde, Toulon, St. Raphael, Fréjus, Menton, Nice, Cannes.

### ARABIS *L.* ROCK-CRESS.

\* *Stem-leaves auricled at the base.*

**A. brassicæformis** *Wallr.* Root and stem-leaves glabrous and glaucous, leathery, entire. 1 $\frac{1}{2}$ -3 ft. high. Pedicel equalling the calyx. Root-leaves oval, long petioled; stem-leaves lanceolate, erect, auricled. Flowers white. Pods long and spreading. Plant extending to a yard in height.

Alpine and mountain woods and rocky places. May-July. Saint Baume, Mont de la Chens, Aiguines, Ampus, Val Casterino di Tenda, Saorgio, St. Grat, mountains above Grasse, etc.

**A. perfoliata** *Lamk.* = **Turritis glabra** *L.* Glabrous Rock-cress. Annual or biennial, glaucous. Root-leaves downy, obovate, sinuate or lobed; stem-leaves glabrous, entire, auricled. Pedicel equalling the calyx. Petals erect, pale yellow. Pods many, crowded, slender, erect, 1-2 in. long, usually curved, on slender pedicels. Stem 2-3 ft. high.

Woods and dry rocky places, very local. May-July. Pignans (N.D. des Anges), Valley of St. Andre near Nice, Sospel, St. Sauveur, etc.

**A. alpina** *L.* Alpine Rock-cress. Stem 3-12 in. high, covered with forked hairs like the leaves. Leaves coarsely toothed, often with a wavy margin. Root-leaves wedge-shaped; stem-leaves ovate-lanceolate, auricled. Petals white, rather large. Pods spreading, flat, about an inch long. Plant very variable.

Shady rocks in sub-Alpine region and mountain woods. May-July. Ste. Baume, north side of Mont de la Chens, Forêt de Brouis; common in Maritime Alps down to the mountains above Menton and Grasse.

**A. Turrita L.** Tower-*cross*. A tall, erect biennial, rough and hoary with stellate or forked hairs. Root-leaves spreading and stalked; stem-leaves oblong-lanceolate, sessile, with rounded auricles, all slightly toothed. Flowers small, dirty yellowish-white. Pods 3 in. long, on short, erect pedicels, all curved downwards in a dense, unilateral, nodding raceme.

Mountain rocks and shady places. May, June. Méounes, Montrieux, Ste. Baume, Aiguines, Valley of St. Andre near Nice, le Chaudron, etc.

**A. auriculata Lamk.** Leaves dentate, rough and whitish with branched hairs; lower oval, attenuate into a stalk; stem-leaves acutely cordate-auricular. Pedicels hardly longer than calyx. Pods remote, spreading. Seeds bordered by a dark line. Flowers white, small.

Limestone hills and mountains. April, May. Le Luc, St. Maximin, Ampus, Châteaudouble, Solliès-Toucas, Tenda, St. Martin Vesubie, etc.

**A. hirsuta Scop.** Hairy Rock-*cross*. Stem, branches, and pods erect; stems leafy. Leaves oblong-lanceolate, rough with branched hairs; root-leaves attenuate into a short stalk. Stem-leaves rarely without auricles and then truncate at base. Flowers small, dirty white. Pods  $1\frac{1}{2}$ -2 in., numerous, very narrow, in a long dense spike. Pedicels as long as calyx. This includes **A. sagittata DC.**, which is the commoner variety in the Var.

Stony and shady places, walls, etc., common. May-June.

*\*\* Stem-leaves sessile or amplexicaul, but not auricled.*

**A. muralis Bert.** Wall Rock-*cross*. Plant less erect than the last, but also covered with branched hairs. Root-leaves spatulate, obtusely dentate; stem-leaves ovate, acutely toothed, slightly amplexicaul. Raceme straight; flowers white. Pedicels finally longer than calyx. Pods adpressed.

Walls and mountain rocks. April-July. Le Luc, Ste. Baume, Carqueiranne, Solliès-Toucas. Fairly common on rocks above Nice, Menton, etc.

**A. verna R. Br.** Annual; stem 4-9 in. high with spreading branches. Root-leaves in a rosette, obovate, attenuate. Leaves rough with stellate hairs. Pedicels shorter than calyx. Raceme about 6 flowered. Flowers small, mauve. Pods linear, spreading.

Dry sandy or rocky places, rare. April. St. Agnes above Menton.

**CARDAMINE L. BITTER-CRESS.**

*\* Leaves all undivided.*

**C. asarifolia L.** A stout, glabrous bright green plant 1-1 $\frac{1}{2}$  ft. high, with scaly stoloniferous root-stock. Leaves cordate-orbicular, sinuate-dentate, stalked, thick, shining. Flowers white, large. Anthers violet. Pods almost erect, twice as long as the pedicels.

Damp, shady, and stony places in the sub-Alpine region of the Maritime Alps, e.g. Val Casterino, Breuil, etc.

*\*\* All leaves pinnate or pinnatifid.*

**C. amara L.** Large Bitter-*cress*. Leaves pinnate, of 5-9 segments; leaflets of root-leaves roundly ovate, of stem-leaves incised-dentate. Petals large, white, anthers purple. Root stoloniferous.

Springs and rivulets in the mountain region, very local and not in the Var. May. Near Pigna, La Giandola, Fontan.

**C. pratensis L.** Cuckoo-*flower*, Lady's smock. Glabrous, about a foot high. Lower leaves lyrate, with rounded leaflets; upper pinnate with narrow lanceolate entire leaflets. Flowers lilac, rarely white, large; anthers yellow.

Damp meadows, by streams, etc. April-May. Le Luc, Toulon. Not recorded by Ardoino for A.M.

**C. impatiens L.** Narrow-leaved Bitter-*cress*?. Leaves pinnate with numerous lobed segments. Petioles auricled at base. Flowers very small, white, petals with narrow limb, often abortive, scarcely longer than in the sepals. Biennial.

Damp woods in the mountain region. May, June.



**C. silvatica** Lk. = **C. flexuosa** Willk. Wood Bitter-cress. Very similar to the last, but with flexuose, angular stem. Leaflets broader and less deeply toothed. Petals oblong, about twice length of calyx. Pods rather spreading.

Damp, shady places. April-June. Aiguines in the Var.

**C. hirsuta** L. Hairy Bitter-cress. Leaves pinnate, with 5-9 segments. leaflets of lower leaves often rounded, of upper leaves narrow, almost linear, usually entire. Petioles not auricled. Petals small, narrow, white. Notwithstanding the name, the plant is more often glabrous than hirsute.

Cultivated and waste ground, and damp, sandy places. Common. February-May.

#### DENTARIA L. TOOTH-CRESS.

Often now placed with **Cardamine**, from which it seems to differ chiefly in the funicle being dilated instead of filiform.

**D. bulbifera** L. = **Cardamine bulbifera** Crantz. Coral-root. Root-stock scaly, whitish. Stem 1-2 ft. high, with several leaves, often with a small bulbil at their axil; lower leaves pinnate, with 5 or 7 segments, upper ones with fewer segments or entire; segments lanceolate, entire or toothed. Flowers few, large, bright lilac, rarely white. Pod seldom formed, and the plant is propagated by the bulbils falling to the ground.

Woods and shady places in the Maritime Alps. April-May. Col de Tenda, Val de Pesio.

**D. digitata** Lamk. = **C. pentaphylla** R. Br. A smaller plant with no bulbils. Leaves digitate and divided into 3-5 leaflets, which are oblong-lanceolate and toothed irregularly. Flowers rose or lilac. Pod erect, spreading. Root-stock scaly, fleshy. Calyx often reddish.

Mountain woods in the Maritime Alps, fairly common. June-August.

**D. pinnata** Lamk. = **C. pinnata** R. Br. Root-stock scaly, obtuse. Stem stout, 1½-2 ft. Leaves pinnate, with 5-9 leaflets, which are lanceolate and irregularly toothed. No bulbils. Flowers large, lilac, rose, or white. Petals 3 times longer than the green calyx. Pods and pedicels erect, spreading.

Mountain woods, especially of beech. May-June. Very rare in the Var (Aiguines, north of Margès); commoner in Alpes-Marit. as at Mont Mulacé above Menton, and valley of Cairos. Hills above Bordighera.

#### SISYMBRIUM L.

\* *Flowers yellow.*

**S. officinale** Scop. Hedge-mustard. Lower leaves runcinate, upper ones hastate; sepals erect. Pods short, very pointed, adpressed against the stem. Flowers small, pale yellow, solitary in the leaf axils. Annual, hairy, 1-3 ft. high.

Cultivated and waste places, common. May-July.

**S. polyceratium** L. Lower leaves runcinate, upper ones hastate, smaller than in the last. Pods short, pointed, inflated. Flowers small, pale yellow, 2 or 3 in the axils of the leaves. An annual or biennial, almost glabrous, about a foot high, very leafy.

Old walls, ruins, and rubbish heaps in the Var. May-July. Excluded by Burnat from les Alpes-Marit.

**S. Columnæ** Jacq. A biennial, rather hoary plant, 1-2 ft. high. Lower leaves petioled, runcinate-pinnatifid, the upper lobe hastate; upper leaves linear entire, peduncles equalling the erect sepals. Pods very long, not inflated.

Borders of roads and waste places. May-June.

**S. austriacum** Jacq., with runcinate pinnatifid leaves, grows in the mountain region, usually above 1000 m.

**S. Sophia** L. Flixweed. Leaves 2-3 pinnatifid, segments narrowly linear, spreading. Flowers very small, ¼ in. in diameter, pale yellow. Pods slender, terete, ascending, curved; pedicels very slender. Stem 1-3 ft. branched above.

Waste places near houses, etc. May-July. Annual.



**S. Irio L.** London Rocket. Leaves runcinate toothed or pinnatifid, glabrous. Radical leaves petioled; terminal lobe often hastate. Flowers very small,  $\frac{1}{8}$  in. in diameter. Pods terete, slender, erect, glabrous, very numerous. Annual or biennial, 1-2 ft. high.

Waste places and borders of fields. March-June.

\*\* *Flowers white.*

**S. Thalianum Gay = Arabis Thaliana L.** Thale-cress. Leaves lanceolate, toothed, pubescent, lower leaves petioled. Stem leaves narrow, sessile. Stem 6-12 in. high, slender, branched, glabrous. Flowers very small,  $\frac{1}{8}$  in. diameter on slender pedicels.

Fields and waste places. March-May.

**S. Alliaria Scop. = Alliaria officinalis Andrs.** Jack-by-the-hedge, Garlic-mustard. Leaves all petioled, usually glabrous, deltoid or reniform-cordate, coarsely toothed or crenate, often 3 in. across. Flowers pure white,  $\frac{1}{4}$  in. diameter. Pods  $2\frac{1}{2}$  in. linear, rigid. Plant 2-3 ft. high, usually annual.

Hedges, banks, and shady places in woods. April-June. Commoner in the hill region of both Departments than in the plain.

### ERYSIMUM L.

**E. orientale R. Br. = E. perfoliatum Crantz.** Hare's-ear. Leaves oblong, entire, glabrous and glaucous, auricled. Flowers white or pale yellowish-white. Siliqua spreading, valves 1-nerved, glabrous like the whole plant.

Fields and waste places, uncommon. May-June.

**E. australe Gay.** Stem angular, erect, 6-18 in. high. Leaves linear or linear-lanceolate, entire or slightly toothed. Calyx twice the length of the peduncles, which are spreading. Flowers large, pale yellow. Pedicels and siliqua somewhat whitish. Seeds winged at top.

Stony places in the hills and lower mountains. May, June. Above Menton, Nice, Grasse, etc., Le Luc, Mont Faron, Ampus, etc.

### HESPERIS L.

**H. laciniata All.** Stem erect, branched, 1-2 ft. high. Lower leaves oblong-lanceolate, petiolate, pinnate at the base; upper ones sessile, ovate or lanceolate toothed. Flowers greenish-yellow, shaded with red, in long racemes. Calyx twice length of pedicels. Siliqua pubescent. Whole plant somewhat viscous, and upper part glandular.

Steep rocks. May, June. Mont Mulacé above Menton, Gourdon, Sospel, La Giandola, etc. In the Var, the variety, *purpurascens* Ford., grows near Bormes, Lavandou, Ollioules, etc.

### MALCOMIA R. Br.

**M. parviflora DC.** Stem-leaves linear, entire, or covered with a greenish down; lower leaves oblong, obtuse, usually sinuate-toothed. Flowers very small, pale mauve. Plant about 6 in. high.

Maritime sands. April, May. Commoner in the Var than in Alpes-Marit. (Golfe Juan, Cannes).

### BRASSICA L.

**B. Robertiana Gay.** Wild Cabbage. A stout glabrous or glaucous plant sometimes a yard high, almost woody at the base. Leaves large, fleshy, the lower ones lyrate, the upper ones lanceolate sessile, not auricled. Sepals erect. Stamens almost equal. Flowers large, pale yellow. Allied to *B. oleracea*.

Limestone rocks and cliffs on the littoral. Rare. April-June. Mt. Faron, Coudon, Gorges d'Ollioules, Monaco, Villefranche, etc.

**B. Napus L.** Cole-seed. An annual or biennial attaining 3 ft. in height, herbaceous, glabrous and glaucous. Lower leaves lyrate, pinnatifid, upper ones embracing the stem and auricled. Sepals spreading. Siliqua spreading. Flowers yellow. Spontaneous in cultivated places. March-May.

**B. Erucastrum L. = Diplotaxis Erucastrum G.G.** Leaves all pinnatifid, with oval, toothed segments, the two lower ones embracing the stem. Sepals widely spreading. Flowers bright yellow. Stem rough, rather leafy. Pods and pedicels spreading.

Mountain region. June, July. Esterel, Grasse, Entraunes.

### DIPLLOTAXIS DC.

**D. eruroides DC.** White Rocket (Plate V). Annual, pubescent or almost glabrous. Stem 1-2 ft. high, branched from the base, leafy. Lower leaves lyrate or sinuate-crenate and petioled; stem-leaves sessile, oblong, dentate. Pedicels rather longer than the loose and hairy sepals. Flowers large, white, turning lilac as they fade. Siliqua 2-3 times length of pedicel.

Cultivated ground. Very common, flowering all the year round, especially in winter and early spring. Fields are often white with it, and though a pernicious weed it is quite a pretty plant.

**D. tenuifolia DC.** Fine-leaved Wall Mustard. A glabrous rather glaucous plant 1-2 ft. high, liqueous at the base, very leafy. Lower leaves pinnatifid; upper ones entire or nearly so. Pedicels 2-3 times longer than the calyx, and nearly as long as the pod. Flowers large, lemon-yellow. When rubbed the plant emits a disagreeable smell.

Old walls, ruins, and waste places, common. April, August.

**D. muralis DC.** Sand Mustard. Annual or biennial, greener than the last and slightly hairy. Stem almost naked, 6-18 in. high. Leaves mostly radical, petioled, pinnatifid or sinuate-dentate. Pedicels rather longer than the calyx and a third length of pod. Flowers rather small, bright yellow.

Fields and waste sandy places. April-August. Never seen by the writer in any country on walls, as its name would imply.

**D. viminea DC.** Annual, glabrous, green. Stems slender, almost naked. Leaves mostly radical; pinnatifid or sinuate. Pedicels equalling the glabrous erect sepals, and about quarter length of pod. Flowers quite small, bright yellow.

Fields and waste places. April-July. Much less common than the others.

### SINAPIS L. MUSTARD.

**S. Cheiranthus Koch.** Annual or biennial, bristly below. Stem 1-3 ft. high, branched. Leaves petioled, pinnatifid, the upper ones with linear-lanceolate lobes. Flowers yellow, large. Sepals slightly longer than the pedicels. Pods long, spreading, each valve with 3 strong nerves, glabrous. Beak long.

Rocky hills and by-paths. May-July.

**S. arvensis L.** Charlock. Annual plant, 1-2 ft. high, branched, hispid. Lower leaves lyrate, upper ones oval or oblong, sinuate-dentate, sessile. Sepals spreading. Flowers small, yellow. Pedicels thick, short. Pods spreading, with hispid torulose valves, which are 3 ribbed.

Common in arable fields. April-June.

**S. alba L.** White Mustard. Plant annual, hispid with reflexed hairs, 1-2 ft. Upper leaves pinnatifid, all lyrate-pinnatifid or pinnate, segments cut and lobed. Pods short, beaded, few seeded, valves scarcely equalling the long broad beak, strongly 3 ribbed, concave. Flowers yellow.

Fields and cultivated places, uncommon. April-June. Excluded by Burnat as native for les Alpes-Marit.

**S. nigra L.** Black Mustard. Plant annual, green, hispid at the base, 2-3 ft. high. Stem rigid, branched. Lower leaves lyrate, with large terminal lobe; stem-leaves linear lanceolate, entire or toothed, glabrous. Flowers small, bright yellow. Pods subulate, 4 angled, glabrous, erect; valves keeled, torulose, 1 nerved. Beak slender and short.

Fields and waste places. May-July.

**S. incana L. = Brassica adpressa Boiss.** Plant biennial, hispid, greyish-green. Lower leaves lyrate, petioled, upper ones lanceolate, entire. Flowers small, yellow. Pedicels short, thick, appressed to the stem. Pods short, cylindrical, erect, torulose, valve 1 nerved. Beak 8 ribbed, swollen.

Waste and cultivated places. May-July.

#### ERUCA DC.

**E. sativa Lam. = Brassica Eruca L.** Plant annual, hispid at the base,  $\frac{1}{2}$ -2 ft. high. Leaves thick, lyrate, dentate with large terminal lobe. Flowers white or yellowish-white, veined with violet, large. Pods erect, short, terete, valves convex, 1 nerved; beak half length of silique, compressed. Very dwarf specimens were in flower on February 28, 1913, on the low sea cliff east of Beau Rivage (Var).

Fields and waste places, rather rare. April, May.

#### MORICANDIA DC.

**Moricandia arvensis DC.** (Plate V). Plant biennial, glabrous and glaucous. Stems woody at base, erect, branched, about a foot high. Leaves rather fleshy, entire or sinuate; lower ones obovate, petiolate, upper ones oblong, sessile, auricled. Flowers violet, veined, large. Silique linear, with short beak; valves 1 nerved.

Banks, walls, and road-sides; very rare. Flowers nearly all the year but chiefly from April to June. Abundant about Ventimiglia, towards La Mortola and on railway banks near Bordighera.

#### DRABA L.

**D. verna L. = Erophila vulgaris DC.** Whitlow-grass. A small annual plant, more or less hairy and very variable. Stem naked, 1-6 in. high. Leaves in a radical rosette, lanceolate-spathulate. Flowers white, very small. Pods oval or oblong, glabrous, many seeded.

Dry, sandy places, very common. February-May. Numerous varieties and sub-species have been named.

**D. muralis L.** Wall Draba. Plant annual, hairy, 6-12 in. high. Stem usually simple or slightly branched, leafy. Leaves oval or oblong, entire or toothed, the root-leaves in a rosette, the stem-leaves sessile, auricled, embracing the stem. Flowers white, very small. Fruiting spike elongated, loose; pedicels spreading, twice as long as the oval pods.

Old walls, banks, and shady places; local. April-June.

**D. aizoides L.** Leaves in small radical rosettes, leathery, linear, entire, edged with stiff cilia. Stem naked, erect 1-3 in. high. Flowers bright yellow. Mountains and sub-alpine rocks. April-June. Frequent in the Maritime Alps and at the summit of the Margès and Mt. de la Chens in the Var, but perhaps not within our altitudinal limits.

#### ALYSSUM L.

**A. halimifolium L.** Plant woody at the base, shrubby, silvery white. Leaves oblong, obtuse. Flowers white, rather large, in a dense corymb. Pods orbicular, glabrous, 3 times length of style. Seeds broadly winged.

Rocky places in the lower mountains of eastern Var (Haut-Esclapon) and Alpes-Marit., e.g. above Menton, Sospel, Saorgio, etc. On limestone by the road towards S. Dalmazzo di Tenda. April-May.

**A. spinosum L.** is a small spiny shrub found on Mts. Coudon and Faron, and Mont Caoumé. April-June.

**A. maritimum Lamk.** (Plate V). Sweet Alyssum. Plant hardly shrubby, but ligneous at the base. Leaves linear, greyish, small. Flowers white or pale rose, scented, small, in a long corymb when developed. Pods elliptic, convex, pubescent; seeds slightly winged.

Sandy and rocky places, extremely common near the sea throughout the littoral, flowering almost through the year.



**A. calycinum** *L.* Plant annual, greyish-green, branching at the base. Leaves oblong or spatulate. Flowers pale yellow, turning white, very small. Calyx persistent. Fruiting spike long, with spreading pedicels. Pods small, orbicular, indented, with adpressed hairs and hardly any style.

Sandy and stony places, common. May, June.

**A. campestre** *L.* Plant annual, greyish-green, differing from the last chiefly in its falling sepals; pods not indented, with spreading hairs and short style a quarter the length of the silicule.

Sandy and stony places, less common. April, May.

**A. montanum** *L.* Plant woody at base. Lower leaves obovate-oblong; upper ones lanceolate or linear, all covered with stellate hairs. Flowers small, yellow, in loose racemes. Petals emarginate. Silicules oval orbicular, slightly emarginate, covered with stellate hairs.

Limestone rocks in the montane region of Alpes-Marit. May, June. Rather rare.

**A. incanum** *L.* = *Farsetia incana* *R. Br.* A biennial, 18 in. high, covered with greyish-green down. Leaves linear-lanceolate, entire or slightly sinuate. Flowers very small, white, in long, erect racemes, petals bifid. Pods large, elliptic, half the length of the pedicels, not bordered.

Dry, sandy places in the hills of Alpes-Marit. Rare. June-August.

#### KERNERIA *Medic.*

**K. saxatilis** *Reich.* Grows on sub-alpine rocks above our limit; rare.

#### LUNARIA *L.*

**L. rediviva** *L.* Is found in mountain woods in the Maritime Alps. The large silicules are elliptical. All leaves petioled. Flowers violet, as in honesty.

#### CLYPEOLA *L.*

**C. Jonthlaspi** *L.* Leaves small, oblong, entire, silvery grey. Flowers in a dense spike, very small, yellow, becoming white. Pods flat, orbicular, winged, relatively large. Plant 2-6 in. high, spreading.

Sandy or stony places on the littoral. March-May. Sainte-Baume, Ollioules, Solliès-Toucas, Cap Martin, Nice, Antibes.

**C. microcarpa** *Moris.* A rather smaller and more slender plant with oboval-spathulate leaves, smaller, slightly convex pods; and with narrower border, the seed occupying at least half the cell.

Sandy places near Solliès-Toucas in the Var. April, May.

#### CAMELINA *Crantz.*

**C. sativa** *Crantz.* Plant erect, 2 ft. high, yellowish-green. Leaves lanceolate, entire, or toothed, auricled. Flowers yellow, on long spreading pedicels forming an elongated raceme. Silicules oboval, twice as long as broad.

Adventitious near Menton, Nice, and Monaco. June.

**C. silvestris** *Wallr.* Plant greyish-green. Leaves lanceolate, obtuse, nearly entire. Flowers pale yellow, small, on a long erect spike. Silicules pear-shaped, slightly longer than broad.

In crops about Hyères, Solliès-Toucas, etc. May, July.

#### CAPSELLA *Vent.*

**C. Bursa-pastoris** *Medic.* Shepherd's purse.

Common in the fields and crops, and very variable. March-October.

#### CORONOPUS *Gaertn.*

**C. procumbens** *Gilib.* Wart-cress.

Rarely on road-sides. June-August.



## LEPIDIDIUM L.

**L. latifolium L.** Broad-leaved Pepperwort. A stout glabrous and slightly glaucous plant 2-3 ft. high, much branched. Stem-leaves broadly lanceolate, entire, petioled; the topmost sessile; root-leaves very large oval, serrated, long petioled. Flowers small, white. Pod emarginate, valves not winged.

Damp places and sides of ditches, uncommon. June, July.

**L. Draba L. = Cardaria Draba Desv.** Hoary Pepperwort. Stem very leafy, 1 ft. high. Stem-leaves oval-lanceolate, auricled, lower leaves petioled, glaucous, pubescent. Racemes paniced, short. Flowers small, white. Pods deltoid-cordate, valves not winged, style distinct.

Fields, railways, and waste places, common. March-June.

**L. hirtum DC.** Hairy Pepperwort. Plant very hairy, 6-12 in. high, grey-green. Stems numerous, spreading or ascendant. Root-leaves oboval, entire or sinuate; stem-leaves oblong, embracing the stem, toothed. Flowers white, rather small. Pods hispid, winged, deeply emarginate.

Waste and rocky places. May, June.

**L. campestre R. Br.** Field Pepperwort, is rather rare on the littoral.

It grows in fields and waste places. May-June.

**L. graminifolium L.** Plant glabrous or nearly so, 1-2 ft. high, with strong odour, much branched. Lower leaves toothed, or lyrato-pinnatifid; stem-leaves linear, entire. Pods small, neither winged nor emarginate. Flowers small, white. Sepals often lilac.

Dry waste places and borders of roads. May-November.

**L. ruderale L.** Narrow-leaved Pepperwort, is recorded from les Alpes-Marit. as rare. The leaves are pinnatifid with narrow lobes, the upper ones entire and linear. Flowers very small, greenish.

## ÆTHIONEMA R. Br.

**A. saxatile R. Br.** Stems woody at the base, ascending. Plant glabrous and glaucous. Leaves entire, thick, lower ones obovate, upper lanceolate. Flowers small, pink. Petals twice length of calyx, two of the sepals saccate. Silicule deeply emarginate, striped, with entire or crenate margin.

Rocks and stony places in the hills. April-June. About Grasse, Nice, Castellon, Vence, Gourdon, Bagnols, Châteaudouble, St. Maximin, Le Revest, etc.

## THLASPI L. PENNY-CRESS.

**T. arvense L.** Field Penny-cress. Plant annual, glabrous, bright green, about a foot high, sometimes smelling of garlic. Root-leaves spatulate, stem-leaves oblong, sinuate-dentate, with short-pointed auricles. Flowers white, small. Silicules very large, orbicular, flat, broadly winged all round, deeply and narrowly emarginate.

Fields and waste places. April-June. Rare in both Departments.

**T. perfoliatum L.** Perfoliate Penny-cress. Plant annual, glabrous and glaucous, about 6-9 in. high. Leaves entire or slightly toothed, the root-leaves ovate, orbicular, the stem-leaves oblong, obtusely auricled. Flowers small, white. Silicules smaller and less broadly winged and with broader notch than in the last.

Fields and other cultivated places. March-May.

**T. allaceum L.** Plant biennial, bright green, strongly smelling of garlic, 1-2 ft. high, reddish and pubescent at the base. Root-leaves spatulate, deeply sinuate-toothed, stem-leaves oblong, toothed, with sharp auricles. Silicules obovate, narrowly winged. Flowers white, minute.

Meadows and grassy fields, rare. April-June. Fréjus, Draguignan, near Grasse, etc.

## IBERIS L. CANDYTUFT.

**I. pinnata** L. Plant annual, pubescent, 9 in. high, erect, branched at top. Leaves pinnatifid, divided into 2-5 linear, obtuse lobes. Flowers white or lilac, rather large, forming a short, dense corymb or umbel. Silicules winged, emarginate, almost square, with obtuse divergent lobes. Style exceeding the lobes.

In the crops and fields, especially in the hills. Occasional. May-July.

**I. linifolia** L. Plant biennial, glabrous. Stem often 2 ft. high, branched, wiry. Root-leaves linear lanceolate, almost entire, stem-leaves linear, entire. Flowers pink or lilac or nearly white, rather small. Silicule small, suborbicular, winged only at the tops, slightly emarginate, the lobes small, acute, and divergent. Style far exceeding the lobes.

Woods on the hills. July-October and sometimes throughout the winter, as in 1912-13.

**I. umbellata** L. Plant annual, glabrous, 1 to 2 ft. high, robust. Lower leaves oblong or lanceolate, toothed, upper ones linear-lanceolate, entire. Flowers pink or purplish, large, in a dense umbel. Silicules broadly oval, winged from near the base, deeply emarginate, lobes erect, acuminate. Style slightly exceeding the lobes.

Rocky hills and ravines, local. May-September.

**I. ciliata** All. Plant biennial, 9-12 in. high. Leaves ciliate, linear, spathulate, obtuse, entire. Flowers white or pale rose, large, in a dense corymb. Silicules as broad at the top as in the middle, winged from the base, lobes triangular, acute, shorter than the style.

Sandy and rocky hills. June, July. Very local.

**I. saxatilis** L. Stems tortuous and ligneous at the base, diffuse, leafy. Leaves fleshy, linear-cylindric, mucronate, entire. Flowers white, rather large. Sepals coloured at the borders. Silicules large, nearly oval, winged, with rounded lobes, open notch and short style.

Rocky places and in the mountains and limestone hills. April-June.

## TEESDALIA R. Br.

**T. Lepidium** DC. = **Lepidium nudicaule** L. A small, nearly glabrous, shining annual, 2 or 3 in. high. Stems usually naked. Leaves radical, linear lanceolate, pinnatifid, with acute lobes or rarely entire. Flowers very small, white, stamens 4. Silicules orbicular. No style. Closely allied to **T. nudicaulis** R. Br.

Sandy places, not common. March, April.

## HUTCHINSIA R. Br.

**H. petræa** R. Br. Rock Hutchinsia. Plant annual, very small, 1-4 in. high, often purplish. Stems very slender, flexuous. Leaves pinnatifid, with lanceolate acute lobes; the root-leaves petioled and in a rosette. Flowers very small, in a loose oblong raceme. Pods oval, rounded at both ends, no style.

Stony or sandy places and old walls. February-May.

**H. procumbens** Desv. is an annual glabrous sp. with entire or toothed leaves, occasionally seen in sandy places. March-May.

## BISCUTELLA L.

**B. lævigata** L. Plant extremely variable, 6 in. to 2 ft. high according to situation. Root-leaves in a rosette, lanceolate or spathulate, toothed; stem-leaves few, sessile, auricled, toothed, upper ones entire, narrow, all hairy. Flowers pale yellow, in loose corymbs; petals twice length of calyx, with long claw. Silicules of 2 large, flattened, circular lobes with membranous wings, each with one seed. Various named varieties are recorded from the Var, e.g.

**B. coronipifolia** L., **B. lima** Reich, and **B. nicæensis** Ford.

Dry banks, woods, and rocks in the hills and mountains, descending to within 100 ft. of the sea in the Var. March-July.

**B. cichorifolia** *Loisel.* Plant annual, hispid with whitish hairs. Stems 1 ft. high or more, branched. Root-leaves oblong, sinuate-dentate, stem leaves lanceolate, toothed, embracing the stem with rounded auricles. Flowers rather large, pale yellow. Silicules large, covered with papillæ. Style longer than the diameter of the silicule.

Rocky waste places from the coast to the hills. April-June.

#### ISATIS L.

**I. tinctoria** L. Dyer's Woad. Plant biennial, green and glabrous or greyish pubescent. Stem attaining 3 ft. high. Lower leaves oblong-lanceolate, upper ones lanceolate, with prominent, pointed auricles. Flowers in a loose panicle, small, numerous, yellow. Pedicels slender, deflexed and shorter than the silicules. Silicules oblong, wedge-shaped, usually rounded at the top and tapering to the base.

Fields and waste places. May-July.

#### NESLIA *Desv.*

**N. paniculata** *Desv.* is common in the crops. April-June. It is a hairy, erect annual with sagittate leaves, and globular pods and long style. Flowers small, yellow.

#### CALEPINA *Adans.*

**C. corvini** *Desv.* Stem erect, about a foot high, glabrous and glaucous like the whole plant. Root-leaves lyrate or pinnatifid, petioled; upper ones entire or toothed, sessile, lanceolate, auriculate. Petals small, white, unequal. Silicule small, ovoid, rugose, prolonged into a short beak, with 4 nerves.

Damp fields. March-May.

#### BUNIAS R. *Br.*

**B. Erucago** L. Plant annual, glandular-hairy, 1-2 ft. high. Lower leaves runcinate-pinnatifid, upper ones oblong, entire or toothed, not auricled. Flowers yellow. Pedicels widely spreading and longer than the silicules which are subtetragonous, 4 celled (superimposed in 2 parts), irregularly winged and toothed. Style tapering, half length of the silicule.

Arable fields, fairly common in the Var, rare in Alpes-Marit. April-June.

#### MYAGRUM L.

**M. perfoliatum** L. Plant annual, glabrous and glaucous, 1-2½ ft. high. Root-leaves lyrate or sinuate toothed; stem-leaves auricled, toothed. Flowers small, yellow; in a long, narrow, adpressed spike. Silicules subtriangular, 3 celled, the two upper cells empty. Style short, pyramidal.

In crops and sandy fields in the Var, rare. May-June. Recorded by Ardoino from Nice but excluded by Burnat from that Department.

#### CAKILE *Adans.*

**C. maritima** *Scop.* Sea Rocket. Plant annual, glabrous, fleshy, 6-12 in. high, bushy but straggling. Leaves fleshy, sinuate-toothed or pinnatifid, with unequal lobes. Flowers lilac or rarely white, rather large. Pods leathery, four times as long as wide, without any partition, but when ripe separating into two articles, of which the upper is deciduous and four-angled, the lower persistent, like a reversed cone with two horns at the end.

Maritime sands. April-October and sometimes, as in 1913, in February.

#### RAPISTRUM *Desv.*

**R. rugosum** *Berg.* Annual, pubescent, 1-3 ft. high with numerous stiff, divaricate branches. Lower leaves petioled, lyrate, with several pinnae at right-angles to the petiole; upper leaves sessile, lanceolate. Flowers small, pale yellow. Silicule with two articles superimposed, of which the upper is globular and rugose with a tapering style.

Fields and waste places. April-June.

Sub. spp. **R. Linnæanum** *Boiss. et Reut.* and **R. orientale** *DC.* are found here and there on the littoral.



## RAPHANUS L.

**R. Raphanistrum L.** Wild Radish or White Charlock. Stem 1-3 ft. high, branched hairy or hispid. Lower leaves lyrate, upper ones oblong, toothed. Flowers pale yellow, sometimes white or mauve. Pods erect, corky rugose, divided transversely into several ribbed oblong joints, with a flattened beak four or five times as long as the last joint. Plant polymorphic, and usually annual.

Fields and road-sides in the Var. April-June.

Ardoino said he "had not come across in the region of his 'flora' this plant so common in all Europe".

Sub. sp. **R. Landra Mor.** is sometimes found on sandy places near the sea.

## CAPPARIDACEÆ.

## CAPPARIS L.

**C. spinosa L.** Caper, Caprier, Prov. Tapénié. Plant half-ligneous, with numerous ascending stems, a yard or more long. Leaves alternate, rather fleshy, glaucous, oval-rounded, entire, with short petiole guarded at the base by two reflexed spines. Flowers very large, pinkish-white, solitary on thick axillary peduncles. Sepals four, ovate, greenish. Petals four, oboval, larger than the calyx. Stamens very numerous, longer than the corolla. Stigma sessile. Berry indehiscent.

Cultivated, and adventitious on old walls and rocks. May-September.

The capers are the flower-buds, and not the fruit as often supposed. They are collected in the summer and put in vinegar. The leaves are often attacked by a parasitic fungus (*Cystopus Capparidis*) which produces whitish blotches and sometimes seriously damages the plant.

## CISTACEÆ.

Capsule 5-10-celled (complete), stigma discoid, 5-10 lobes. Shrubs or under-shrubs with large flowers ..... **CISTUS.**

Capsule 2-3-celled (incomplete), stigma 3 lobed, all stamens fertile. Under-shrubs or herbs with usually small flowers, 2 outer sepals very small  
**HELIANTHEMUM.**

Capsule 2-3-celled, stigma distinctly 3 lobed, outer stamens sterile.....**FUMANA.**

**CISTUS L.**

\* *Flowers red.*

**C. albidus L.** (Plate VI). A shrub 2-4 ft. high. Leaves whitish-green with tomentum, oblong, or ovate lanceolate, sessile, semi-embracing. Flowers very large, rose or magenta coloured (rarely white), crenate at the edges and wrinkled, 1-4 at summit of the branches, almost in an umbel. Capsule ovoid, velvety, shorter than calyx. Sepals ovate-acuminate. Hoary Cistus.

Dry hills and woods, especially on limestone. March-May.

**C. crispus L.** A shrub 1-2 ft. high, pale green, branches covered with long hairs. Leaves sessile, oblong-lanceolate, crisped at the borders, rugose. Flowers large, magenta coloured, almost sessile in clusters at the summit of the branches. Sepals lanceolate-acuminate. Capsule small, downy, much shorter than calyx. Leaves densely covered with stellate hairs.

Borders of fields and dry woods on siliceous soil. May-June. Uncommon. Grasse, Bormes, Fréjus, Porquerolles, etc.

\*\* *Flowers white.*

**C. monspeliensis L.** (Plate VI). Shrub 2-3 ft. high, green, very scented, hairy and viscous in the upper parts, glabrous below. Leaves sessile, narrow-lanceolate, dark green above, paler beneath, edges curled under, rugose, 3-5 nerved. Flowers 3-10 in terminal unilateral racemes. Petals white with yellow spot at base, twice length of calyx. Sepals 5, ovate, acuminate, the 2 outer ones rather larger. Capsule ovoid. (See also Plate VII.)





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PLATE VI.

1. *Cistus salvieifolius*.  
3. *Dianthus longicaulis* (a. petal).

2. *Helianthemum Tuberaria*.  
4. *Cistus monspeliensis*. 5. *Cistus albidus*.



Dry hills, pine woods, etc. Especially common near the sea. March-June. After rain it scents the air with its resinous odour; and Napoleon said he should know his native Corsica with his eyes shut from the scent of this plant. At its roots and on those of *C. salviæfolius* the curious orange-red parasitic plant *Cytinus hypocistis* is often found. These two species of *Cistus* with *C. albidus* are typical maquis plants, and the 3 species are shown together in one of the photos. Several varieties and hybrids of these are found in the Var. Before the end of February, 1913, blossoms of the 3 common species were seen by the writer near Carqueiranne, but this is quite exceptional, the season being remarkably advanced.

***C. salviæfolius* L.** (Plate VI). *Salvia*-leaved *Cistus*. Shrub 1-3 ft. high, slightly scented, green, covered with stellate hairs, but not viscous. Leaves shortly petioled, oval or oblong, downy, rugose. Flowers white, with yellow centre, larger and more cup-shaped than the last, 1-4 on long axillary peduncles. Sepals 5, ovate-cordate, downy. Capsule pentagonal, truncate, rather downy, shorter than the calyx, which is often reddish.

Dry places, especially in the hills and extending to the lower mountains of both Departments. April-June.

***C. iadaniferus* L.** Shrub often more than a yard high, very fragrant, with viscous branches. Leaves sessile, lanceolate, green and glabrous above, whitish with tomentum below. Flowers very large, 6-8 cm., white or spotted with purple, peduncled, solitary. Sepals 3, suborbicular, glabrous, style very short. Capsule subglobose, velvety, with 10 cells.

Pine-woods and dry hills. April-May. Local. Fréjus, and by the road from there to the Esterel; Le Muy, between Roquebrune and Bagnols.

### HELIANTHEMUM Gaertn.

\* *Lower leaves usually without stipules.*

***H. Tuberaria* Mill.** (Plate VI). Herb 9-12 in. high, silky below. Lower leaves more or less in a rosette, ovate-lanceolate, silky, 3 nerved, without stipules, upper leaves and calyx glabrous. No style. Flowers pale yellow, in a loose raceme becoming unilateral. Capsule oval, downy. A beautiful plant.

Woods and sandy hills. May-June.

***H. halimifolium* Willd.**, with large yellow flowers blotched with violet at base, grows on the sands near La Seyne.

***H. guttatum* Mill.** A slender, erect pubescent or hairy annual. Lower leaves oblong-lanceolate, opposite, without stipules, 3 nerved, upper ones alternate and with leaflike stipules. Flowers in a loose raceme. Petals yellow, often with a dark crimson spot at the base. Capsule smooth, with ciliate valves.

Common and very variable in woods and sandy places. April-June.

\*\* *Lower leaves with stipules.*

***H. salicifolium* Pers.** A small downy annual. Lower leaves opposite, stipuled, oblong; upper ones alternate, lanceolate, stipuled. Flowers rather small, pale yellow, in a loose raceme. Sepals hairy, flat after flowering. Capsule rather shorter than calyx, downy at the joints.

Dry grassy places, especially on limestone. April-June.

***H. vulgare* L. = *H. Chamæcistus* Mill.** Common Rock-rose. Shrubby with almost woody base, about a foot high, very variable. Leaves oval, oblong or linear-lanceolate, green and hairy above, downy beneath or entirely green; stipules lanceolate. Flowers yellow, rarely white or pink (*H. roseum*), and sometimes quite large (*H. grandiflorum* DC.). Sepals oval, very hairy. Style elongate, bent upwards, rather shorter than the downy capsule.

Dry places, hill-sides, and woods. April-June.

Var. *roseum* Burn. = *H. roseum* Bert. Flowers usually pink, rarely nearly white or crimson. Plant greyish by reason of the short hairs on the stems, leaves, and pedicels.



Common on dry banks in the littoral region of Liguria and eastern portion of Alpes-Marit., where it flowers most of the year.

Var. *semiglabrum* *Burn.* = *H. Jacquinii* *Ard.* Flowers pink. Leaves light green, narrow, shining; upper ones and pedicels nearly glabrous. Leaves often rolled in at the margins.

Less common in the littoral region of Liguria and Alpes-Marit. Above Menton, Val Nervia, etc.

*H. serpyllifolium* *Mill.* Grows in a few places in the Var.

*H. polifolium* *DC.* Plant shrubby, a foot high, with woody base. Leaves opposite, hoary and downy on both sides, lanceolate or linear stipulate, margins recurved; pedicels bracteate. Stipules linear, small. Flowers white with yellow centre. Sepals tomentose, inner obtuse. Capsule large, sub-globular, tomentose.

Dry limestone hills. May-July.

*H. pilosum* *Pers.* This is a sub-species of *H. polifolium* with narrower linear leaves, almost glabrous calyx, slightly hairy on the nerves, and small capsule. Sometimes the white flowers are smaller.

Hills and dry places. May, June. Solliès-Toucas, Toulon, Ampus, Le Chandon, etc.

*H. hirtum* *Pers.* Plant woody at the base, greyish with stiff hairs. Leaves oblong-lanceolate, margins recurved, white tomentose beneath, stipules linear. Flowers yellow, in long terminal spikes with many bracts. Sepals oval, hispid. Capsule small, trigonous, downy.

Dry limestone hills and *garrigues* in the Var. May-June. Other species found on limestone hills are: *H. montanum* *Vis.* and *H. italicum* *Pers.* Flowers small, yellow.

#### FUMANA *Spach.*

*F. viscida* *Spach.* (*Helianth. glutinosum* *Pers.*). A slender glandular-hairy plant with ligneous base. Leaves linear-lanceolate, margin recurved; lower leaves opposite, upper ones alternate. Stipules terminated by a bristle. Flowers yellow, in a short terminal raceme. Petals obovate. Pedicels pubescent, twice as long as the oval sepals.

Dry stony places and rocky limestone hills. May-June. Polymorphic.

*F. lævipes* *Spach.* (*Helianth. lævipes* *Willd.*). A slender plant 9-12 in. high with woody base, glandular in upper portion. Leaves all alternate, linear, setaceous, in bundles on the young branches—stipules mucronate. Pedicels 2-3 times as long as the oval sepals. Flowers yellow.

Dry hills and woods. May-June. Hyères, Mont Coudon, Toulon, Carqueiranne, Menton, Nice, Grasse, etc.

*F. procumbens* *Gren. et Godr.* (*Helianth. procumbens* *Dun.*). A small decumbent shrubby plant 6-9 in. high with woody base, covered with short whitish hair. Leaves linear, rather short, the upper ones as long as the lower. Flowers solitary, yellow. Pedicels shorter than or equalling the sepals and the leaves.

Dry hills and rocky places. May-July. Local. Toulon, Roquebrune, Mont Fenouillet, St. Martin Lantosque.

*F. Spachii* *G.G.* (*H. Fumana* *Dun.*). Differs from the last chiefly in its leaves being alternate, and the upper ones shorter than the lower; and the flowers in racemes of 1 to 5, the upper one terminal. The slender curved pedicels are longer than the sepals or the leaves. Valves of capsule very open at maturity.

Dry hills and rocky places; very common. April-June.

#### RESEDACEÆ.

#### RESEDA *L.*

Leaves entire, lobed or pinnatifid; stipules glandular. Flowers racemed. Calyx irregular. Petals unequal, 2-multifid. Disk broad; honeyed, dilated behind. Stamens 10-40.





The three common species of *Cistus* in winter (Feb. 3): *C. salviaefolius*,  
*C. monspeliensis*, and *C. albidus* (right) with *Quercus pubescens*



The common tall Spurge with dark purple glands (*Euphorbia Characias*)



**R. Phyteuma** L. Mignonette. Annual or biennial, pale green. Leaves oboval-oblong, entire, the intermediate ones trifid. Flowers whitish, in loose racemes when developed; petals 6. Pedicels equalling the calyx, which is much developed finally. Stamens 16-20. Capsules pendent, large, oboval.

Waste places and cultivated ground, common. February-October.

**R. lutea** L. Cut-leaved Mignonette. Biennial, about a foot high. Leaves very variable, deeply divided; intermediate ones multifid, lower leaves entire or tripartite. Pedicels longer than the calyx. Flowers greenish yellow, in dense raceme. Sepals and petals 6, very unequal. Capsule oblong, 3 toothed.

Fields and waste places, especially on limestone. April-July.

**R. Luteola** L. Dyer's Rocket. Annual or biennial, glabrous, 2-3 ft. high, erect. Leaves linear-lanceolate, entire but slightly undulate. Flowers yellow-green, in long spike-like racemes. Petals 3-5, irregular. Disk large, crenate. Stamens 20-24. Capsule short, 3 lobed, nearly globular.

Walls and waste places. May-August. Rare in both Departments.

**R. alba** L. = **R. suffruticulosa** L. White Mignonette. Annual or biennial, 1 to 2 ft. high, shrubby at base. Leaves pinnatisect, undulate, glaucous and fleshy. Pedicels shorter than calyx. Flowers white, in long dense racemes; petals 5. Stamens 12-14. Capsule erect, oblong, 4 toothed.

Maritime sands, rare. April-July. Near Hyères at Almanarre and Isthmus de Giens, Toulon, etc.

## VIOLACEÆ.

## VIOLA L.

\* *The two upper petals directed forwards* (Violet).

**V. arborescens** L. Shrubby Violet. Plant caulescent, covered with greyish hairs. Stems semi-ligneous, very leafy above. Leaves linear-lanceolate, entire or toothed. Stipules linear, entire,  $\frac{1}{2}$  length of the leaves. Peduncles without bracts. Sepals lanceolate-acute, ciliate. Flowers small, pale violet; spur short; stigma sharply hooked.

Sandy woods and maritime sands in the Var; rare. September, October. Saint-Cyr and Six-Fours near Cap Negre.

**V. hirta** L. Hairy Violet. Leaves subtriangular-cordate, deeply crenate and with shallow sinus, pubescent. Sepals obtuse. Spur long and hooked, style hooked; stigma oblique. Flowers inodorous or sometimes faintly scented, violet or rarely white.

Grassy places among the hills, local. April.

**V. odorata** L. Sweet Violet. Runners long. Leaves broadly cordate, rounded at top, slightly hairy or downy. Sepals obtuse. Spur nearly straight; style hooked; stigma oblique, fruiting peduncle deflexed. Flowers violet, rarely white or pinkish, sweet scented.

Hedges, woods, and fields, common. January-April.

**V. alba** Bess. This is distinguished from **V. odorata** by its narrow stipules with long fringes, its longer and more pointed leaves, its non-rooting stolons producing flowers the same year, and by its more hispid capsules. Flowers white, rarely variegated, scented.

Borders of fields, wood and hills, less common. February-April.

**V. silvestris** Lamk. Wood Violet. Leaves cordate, slightly acuminate, nearly glabrous. Stipules linear-lanceolate, fringed. Flowers pale violet or bluish, inodorous. Spur narrow. Sepals very acute. Stigma acute, recurved. Capsule glabrous.

Woods and fresh shady places. March, April.

**V. Riviniana** Reichb. and **V. arenaria** DC. also occur in places.

**V. canina** L. Dog Violet. Glabrous. Leaves ovate-cordate or oblong-lanceolate, crenate-serrate. Stipules small, narrow, toothed and ciliate. Fruiting peduncle erect. Style clavate, hooked. Stigma oblique. Variable in size, habit, and colour of flower. Sepals narrow, acuminate.

Sandy places in woods and hedges. April. Represented in the Var by the sub-species **V. Jordani** *Hanry*. It grows in woods and hedges in the north of the Department.

**V. palustris** L. Marsh Violet. Occurs in damp places in the montane and sub-Alpine region of the Maritime Alps.

\*\* *Upper petals erect, lower one directed downwards* (Pansy).

**V. tricolor** L. Heartsease or pansy. Sometimes annual. Glabrous or hairy. Flowers oval or oblong, crenate. Stipules pinnatifid, with large terminal lobe. Spur short. Flowers pale yellow, white, mauve, or parti-coloured; very variable in size. Polymorphic.

Fields and waste places, common. April-June.

The varieties **V. arvensis** *Murr.*, and **V. Kitkaibeliana** *R. et S.* also occur.

## POLYGALACEÆ.

### POLYGALA L. MILKWORT.

Herbs or shrubs with entire leaves and no stipules. Flowers very irregular in terminal racemes. Sepals 5, of which the 2 inner are larger, and usually petal-like. Petals 3, 4, or 5, all more or less united with the stamens. Style with a single stigma. Ovary and capsule flat, 2 celled.

**P. comosa** *Schk.* Leaves narrow and glabrous; bracts longer than the flower when in bud; flowers small and close, pale pink; lateral lobes of the arillus shorter than those of **P. nicænsis** and about a third of the length of the seed; central nerve of the wings often not uniting with the lateral nerves.

Fields and grassy hills. April-June. Rare in the Var. Abundant near the mouth of R. Nervia.

**P. nicænsis** *Risso.* Leaves lanceolate. Middle bract as long as the pedicels of the open flower or longer; lateral bracts about the length of the pedicel; capsule much shorter than the wings; lateral lobes of arillus longer than the middle lobe and almost half the length of the seed. Flowers rather large, pink, blue, or rarely white.

Hilly, grassy places, borders of pine-woods, etc. Commoner in Alpes-Marit. than the Var. April-June.

There are two distinct varieties of **P. nicænsis** :—

Var. **pubescens** *Burn.* Flowers blue in a loose raceme. Stems spreading; leaves pubescent; central nerve of the wings branched between the base and its reunion with the lateral nerves.

On the ridge between the Nervia and Roja valleys and elsewhere in the lower mountains near Bordighera.

Var. **confusa** *Burn.* = **P. rosea** *Gren. et Godr.* Flowers usually pink, rarely blue. Stems more upright and rigid, leaves longer and narrower, glabrous or glabrescent; wings slightly mucronate, with the central nerve more or less branched between the base and its reunion with the lateral nerves.

Sandy ground in hilly districts, e.g. about Bordighera and San Remo, the Maures, Montrieux, Esterel (near Fréjus).

**P. vulgaris** L. Common Milkwort. Bracts shorter than the flowers when in bud; nerves of the wings like those of **P. pubescens** and **P. confusa**; lobes of the arillus short as in **P. comosa**; flowers blue, violet, pink, or white. Stems leafy. Leaves oblong, upper ones lanceolate. Very variable plant.



Woods and grassy hills. May-July. *P. serpyllacea* Weihe with shorter, rounder leaves, also occurs. Some of the French botanists consider *P. comosa* and *P. nicænsis* sub-species of *P. vulgaris*.

*P. calcarea* Schult. Branches many, rooting and proliferous. Root-leaves rosulate, stem-leaves oblong or lanceolate. Inner sepals longer and broader than the obovate capsule; central nerve branching above the middle. Flowers blue, pink, or white.

Dry banks, woods, and limestone hills. May-July. La Sainte-Baume near Nans.

*P. monspeliaca* L. A slender annual, very distinct from the other species. Stems simple or branched, stiff and upright. Leaves linear-lanceolate, acute. Central nerve of the wings branched but not uniting with the lateral nerves; capsule pendent, twice as long as broad. Capsule broadly winged, longer than the pedicel. Arillus very small. Flowers greenish-white, rather large.

Grassy places, hill-sides, olive terraces. May-June.

I am indebted to Mr. Bicknell's "Flora of Bordighera and San Remo" (1896) for many of the distinguishing characters of these difficult plants.

*P. Chamæbuxus* L. occurs in the lower Maritime Alps and in the woods of Montrieux (Var). *P. exile* DC. is very rare in sandy places, and *P. amara* L. and *P. alpina* Perr. et Song. sometimes occur in the mountains.

## FRANKENIACEÆ.

## FRANKENIA L. SEA HEATH.

*F. pulverulenta* L. A much-branched spreading annual. Leaves obovate, flat puberulent beneath, glabrous above, contracted into a short ciliated petiole. Flowers small, mauve, sessile, in dichotomous terminal cymes. Petals emarginate, much shorter than calyx.

Maritime sands, not common. May-August.

*F. hirsuta* L. A perennial with thick root-stock, and hard, almost woody stems. Leaves linear or linear-lanceolate, rather fleshy, ciliate at base, margins recurved. Flowers pink, whitish, or pale violet, rather larger than in the last species, in terminal clusters. Petals toothed, almost equal in length to calyx.

Var. *intermedia* Boiss.

Stems tomentose, leaves long ciliate, calyx hispid.

Var. *lævis* Boiss. = *F. lævis* L.

Stems glabrous or finely pubescent, leaves shortly ciliate, calyx glabrous.

Maritime rocks and banks. May-July.

## CARYOPHYLLACEÆ.

Tribe I. SILENEÆ. Stipules 0. Calyx divided above into 4-5 lobes. Disk elongated, bearing the petals and stamens. Styles free. Claw long.

\* *Styles 3-5; capsule 5-10 valved.*

Styles 5; capsule 5 or 10 valved ..... LYCHNIS.  
 Styles 3; capsule 3 celled, indehiscent ..... CUCUBALUS.  
 Styles 3; capsule 1 celled, 6 valved ..... SILENE.

\*\* *Styles 2; capsule 4 valved.*

Calyx with scales at base; embryo straight ..... DIANTHUS.

Calyx without scales at base.

Calyx bell-shaped, claw short ..... GYPSOPHILA.  
 Calyx tubular, claw of petals long. Flowers 1 or 2 at the nodes ..... VELEZIA.  
 Calyx tubular; claw long; flowers in terminal corymbs ..... SAPONARIA.

Tribe II. ALSINEÆ. Sepals separate at base. Disk small. Styles free.

\* *Stipules scarious.*

Styles and valves of capsule 5 ..... SPERGULA.  
 Styles and valves of capsule 3 ..... SPERGULARIA.

\*\* *Stipules o.*

Capsule cylindric, 6 valved. Petals jagged. Styles 3 ..... HOLOSTEUM.  
 Capsule cylindric, 8-10 valved. Petals usually notched. Styles 3. CERASTIUM.  
 Capsule globose, 6-10 valved. Petals 2 fid. Styles 3-5 ..... STELLARIA.  
 Capsule with 6 entire or 3 bifid valves. Petals entire. Styles 3, rarely 2,  
 4, 5 ..... ARENARIA.  
 Capsule with 3 entire valves. Styles 3 ..... ALSINE.  
 Capsule 4 valved. Seeds numerous. Sepals with 1 or no nerve. MÆHRINGIA.  
 Capsule 2 valved. Seeds 1-3. Petals 4. Calyx 4 partite, scarious. Sepals 3-5  
 nerved ..... BUFFONIA.  
 Capsule with 4-5 entire valves. Petals 4-5 or often 0 ..... SAGINA.

Tribe III. POLYCARPEÆ. Stipules scarious. Sepals separate. Disk and  
 petals small or 0. Stamens 5 or less. Styles connate at base. POLYCARPON.

Tribe IV. PARONYCHIÆ. Stipules scarious. Sepals distinct or connate.  
 Petals small or 0. Ovary 1 celled; styles 2-3; ovules 1-2.

Leaves connate. Capsule indehiscent, 1-seeded. Petals 0. Stipules 0.

Leaves alternate. Petals 5. Stigmas 3 ..... SCLERANTHUS.  
 Leaves when opposite not connate. Sepals green, obtuse ..... CORRIGIOLA.  
 Leaves opposite. Bracts silvery. Styles 2 ..... HERNIARIA.  
 Leaves alternate, fleshy. Capsule 3-4 valved, trigonous, many seeded.  
 Styles 3 ..... PARONYCHIA.  
 Styles 3 ..... TELEPHIUM.

### LYCHNIS L.

**L. Githago Scop. = Agrostemma Githago L.** Corn Lychnis. An  
 annual silky plant, 2-3 feet high. Leaves linear-lanceolate, acute. Flowers  
 reddish-purple, large, solitary. Petals truncate. Calyx with linear divisions  
 longer than the petals.

In the crops. April-June.

**L. Flos-Cuculi L.** Ragged-robin. Flowers linear-lanceolate, glabrous,  
 in dichotomous cymes. Plant slightly viscous at the top. Calyx usually reddish,  
 10 nerved. Petals rosy, 4 cleft with linear segments. Root-leaves petioled,  
 oblong-lanceolate, acuminate; stem-leaves narrow.

Damp meadows. April-June.

**L. Viscaria L.** Viscid Lychnis. Leaves lanceolate, glabrous, but often  
 ciliate at base. Stem very viscous in upper part below the joints. Petals obovate,  
 slightly emarginate, purplish-red. Scales short. Calyx reddish. Flowers in  
 contracted cymes or panicles.

Dry places among the lower mountains in Alpes-Marit. May-June.

**L. diurna Sibth.** Red Campion. Lower leaves obovate petioled, upper  
 narrower, softly hairy, slightly viscid above. Flowers red, in loose dichotomous  
 cymes, lobes oblong, scales lanceolate. Calyx reddish, rarely green. Capsule  
 wide-mouthed, pedicel very short.

Lower mountain region of Alpes-Marit., local. May, June.

**L. vespertina Sibth.** White Campion. Leaves lanceolate, pubescent,  
 more or less viscid. Calyx greenish, teeth triangular. Flowers white, open and  
 fragrant in the evening. Capsule conical, teeth short, linear-lanceolate, erect.  
 Similar to the last except in colour.

Fields and waste places. April-July.

**L. macrocarpa Boiss.** A more robust and glandular plant than the last,  
 3 ft. high, with broader leaves, similar white or pinkish flowers, scented in the  
 evening, but with calyx teeth lanceolate-acute (not triangular obtuse), and the 10  
 teeth of the capsule are reflexed and not erect.





PLATE VIII.

1. *Linum narbonense* (a. petal.)      2. *Silene sericea*.      3. *Silene muscipula*.  
 4. *Hypericum Coris* (b. sepal magnified.)      5. *Linum maritimum*.



Fields and waste places, rare. April-June. Saunier near Gassin, H.S.T., in 1907; borders of the Gapeau near la Roquette.

### CUCUBALUS L.

**C. baccifer L.** A pubescent branching plant, 1-2 ft. high. Leaves ovate, acute, shortly petioled, soft. Flowers greenish-white, pendent, shortly peduncled, in a loose leafy dichotomous cyme. Calyx very spreading, bell-shaped, with 3 lanceolate lobes. Petals separate, bifid. Stamens, 10. Styles 3. Fruit globular, shining, black.

Hedges and thickets. June-September. Very local in the Var.

### SILENE L.

\* *Petals without scales at the throat.*

**S. Cucubalus Wibel. = S. inflata Sm.** Bladder Campion. Plant glaucous and usually glabrous, 1-2 ft. high. Leaves variable, ovate, obovate, or oblong-lanceolate. Flowers few, white (or rarely pinkish), drooping, proterandrous, in erect dichotomous panicles or cymes. Capsule globose, top conical. Petals deeply bifid.

Fields, hill-sides, and dry places. April-June. In the Var it appears as the var. *vesicaria Schrader*.

**S. Otites Sm.** Stem about a foot high, almost glabrous, viscous above, erect. Lower leaves spatulate, more or less in a rosette, upper leaves linear, widely separated. Calyx short, bell-shaped. Petals entire. Flowers greenish-yellow, small, diœcious, almost in whorls and forming a long panicle.

Hill-sides and dry places. May-July.

**S. italica Pers.** Plant hairy, branched, viscous in upper portion. Lower leaves oblong or spatulate, upper ones almost linear. Calyx elongate, club-shaped. Flowers white, in pyramidal panicles; petals bifid. Capsule oblong, equalling the hairy carpophore.

Woods, slopes, and grassy places. April-July.

\*\* *Petals with scales at the throat; capsule sessile in the calyx, or on a very short carpophore.*

**S. conica L.** An annual greyish-green downy plant, erect and about 6 in. high. Leaves linear, lanceolate. Calyx conical, inflated, with slender teeth and 30 nerves; capsule ovoid, conical without carpophore, rather shorter than calyx. Petals small, bifid, pink.

Sandy fields and sea-shores, local. May-July.

**S. conoidea L.** (very rare), **S. reflexa Ait.**, and **S. brachypetala Rob. et Cast.** are also recorded. The last has short petals and is allied to *nocturna*.

**S. gallica L.** An annual glandular hairy plant about a foot high. Lower leaves oblong-spathulate, upper ones linear-acute. Flowers subsessile, whitish or pink, in unilateral racemes. Calyx covered with long spreading hairs, at first cylindrical, then ovoid, with nerves usually red. Petals entire, emarginate or tridentate.

Fields and sandy places, common. April-June.

There are several varieties, a very beautiful one with pale pink petals with large dark crimson spot at the base being **S. quinquevulnera L.**

It grows in similar places, and is often as common or even commoner on the littoral and especially in the Var.

**S. nocturna L.** An annual glandular hairy species, erect, 1-2 ft. high. Lower leaves obovate, spatulate, upper ones narrow, lanceolate or linear. Calyx cylindrical oblong. Flowers in one or two racemes, unilateral, sessile; petals deeply bifid with narrow divisions, white above, livid beneath, sweet-scented at night when they open. Capsule ovate-oblong on a very short carpophore.

Road-sides and sandy places. May-June.

**S. nutans** L. Nodding Catch-fly. Plant hairy, 18 in. high, springing from an almost woody stock. Lower leaves oblong-spathulate, upper ones sublinear. Calyx oblong, slightly club-shaped. Flowers white or pinkish, drooping, in a long loose, unilateral raceme. Capsule small, ovate conical, rather longer than calyx, on a short carpophore.

Dry hill-sides and slopes, May-July. Local. Esterel, St. Martin Lantosque, Col du Lentisque near St. Raphael, etc.

**S. inaperta** L., **S. laeta** A. Br., and **S. brachypoda** Rouy, are also found.

\*\*\* *Petals with scales at the throat; capsule on a carpophore at least as long as it.*

**S. sericea** All. (Plate VIII). An annual plant covered with greyish silky hairs. Stems slender, prostrate or ascending. Leaves small and fleshy, the lower ones spatulate, the upper linear. Calyx very long, enlarged towards top. Petals bifid, pink or white, with large bifid scales at throat. Flowers solitary, on long peduncles. Capsule ovate, shorter than the downy carpophore.

Sea-shore and sandy places near the sea. May-July. Abundant between Ventimiglia and Bordighera and elsewhere in Liguria.

**S. nicæensis** All. A biennial, hairy-glandular species. Leaves fleshy, usually covered with sand; lower ones linear oblong, upper ones linear acute. Flowers white above, greenish or livid below, in unilateral spikes or racemes. Calyx club-shaped, with obtuse teeth. Capsule ovate-oblong, as long as its carpophore.

Sandy sea-shore. April-June. Sometimes abundant.

**S. Saxifraga** L. Stem prostrate or ascending, 4-6 in. high, grass-green like the leaves, 1-2 flowered. Leaves narrow linear, acute, rough at the edge, with narrowed connate bases. Calyx turbinatate, 10 nerved, glabrous, erect, pale green or brownish, teeth rather obtuse. Flowers white or pink within, greenish-red without.

Rocks in calcareous mountains. May-July. Mt. Faron, etc., above Toulon, La Sainte-Baume, Ampus, above Mentone, etc.

**S. muscipula** L. (Plate VIII). An annual glabrous species 12-18 in. high, very viscous in upper part. Lower leaves obovate-obtuse, upper ones linear-lanceolate, acute. Flowers sessile, bright rose, in a loose dichotomous cyme. Petals small, bifid. Calyx oblong, glabrous, 10 nerved, with acute teeth. Capsule oblong, two or three times as long as the downy carpophore.

In crops and dry slopes. May-July. Local. Antibes, Cannes, Carqueiranne, etc. The specimen figured was gathered by Mr. Sowerby near Eze, 11 May, 1885.

**S. Armeria** L. An annual glabrous glaucous plant, a foot high, viscous above. Leaves oval-lanceolate, acute, heart-shaped below and embracing the stem. Flowers red, attractive but small, numerous, in a dense dichotomous corymb. Calyx elongated club-shaped, reddish, 10 nerved, glabrous. Capsule oblong, as long as the carpophore.

Crops and rocky places in the mountains of Alpes-Marit. June-July.

### SAPONARIA L.

**S. officinalis** L. Soapwort. A stout glabrous plant, 2-3 ft. high. Leaves large, oblong-lanceolate. Calyx cylindrical, 15-20 nerved. Flowers pale pink, large and attractive, sweet-scented, shortly peduncled, in a compact cyme.

Hedges and borders of streams. June-August.

**S. Vaccaria** L. = **Vaccaria parviflora** Mæench. An annual glabrous and glaucous weed, 12-18 in. high. Stem branched, leafy. Leaves oblong-lanceolate, sessile, 1 nerved. Flowers bright pink, on long peduncles, in a loose dichotomous cyme. Calyx ovoid, 5-winged, with triangular teeth. Petals with short limb, emarginate. Capsule ovoid, with very short carpophore.

Crops and waste places. May-June.

**S. ocymoides** L. Stem trailing. Plant hairy, glandular at top. Leaves broadly lanceolate or oblong, ciliate, 1 nerved. Flowers bright rose or paler, shortly peduncled, in panicles. Calyx cylindrical, hairy glandular, often very red. Capsule oval, 4 times length of the glabrous carpophore.

Stony slopes especially on limestone. May-July. This sub-Alpine plant descends to near Nice, Menton, and Grasse, and in the Var it appears near Fréjus, Montrieux, Nans, La Garde, Toulon, etc., at quite low elevations.

#### GYPHOPHILA L.

**G. repens** L. Stem 3-6 in. high, erect or ascending, often bent at the nodes, glabrous like the leaves, which are linear, entire, acute, rather glaucous and fleshy. Flowers small, white veined with pink, or pink beneath, in loose paniculate cymes. Calyx bell-shaped, 5 cleft. Capsule subglobular, with very short carpophore.

Rocks, sandy beds of torrents and grassy places in the mountains. June-September. This Alpine plant is found in sandy places near Les Salles and by the Verdon near Aiguines.

#### VELEZIA L.

**V. rigida** L. A small hairy glandular plant with rigid stem, much branched and often reddish. Leaves linear, ciliate, 3-5 nerved, grooved. Flowers small, pink, erect, solitary or in pairs, subsessile at the nodes of the stem and branches. Petals bifid, with distinct scales. Calyx tubular, elongated. Capsule cylindrical, slender, without carpophore, 4 toothed.

Dry sandy places, rare in the Var. May-July. Fréjus, Le Luc, Forêts des Maures et du Dom. Doubtful for les Alpes-Marit.

#### DIANTHUS L. PINK.

\* *Calyx short, 5-angled; scales of calyx entirely scarious; capsule ovoid (Tunica Scop.).*

**D. Saxifragus** L. = **Tunica Saxifraga** Scop. Stem slender, glabrous, 6-8 in. high, with spreading branches. Leaves linear-acute. Corolla pale rose, veined, small, solitary. Calyx bell-shaped. Capsule ovoid.

Arid stony places. July-August.

**D. prolifer** L. = **Tunica prolifera** Scop. A stiff, erect, glabrous annual, 6-12 in. high, usually simple. Leaves few, narrow, erect, with broad sheath. Calyx of broad, dry, shining, imbricated scales and enveloping the whole flower. Flowers small, pink, in compact terminal heads. In the Var the commonest form is **D. velutinus** Guss.

Sandy dry places, common. April-October.

\*\* *Flowers solitary at the summit of the stems.*

**D. longicaulis** Ten. (Plate VI). Leaves rough, slightly triquetrous; scales of calyx a quarter of its length. Petals not contiguous, with toothed limb, glabrous at the throat, much shorter than the claw. Flowers rose, sweet scented.

Dry hills of the littoral region. June-August.

**D. Caryophyllus** L. Plant 1-2 ft. high, polymorphic. Leaves broadly linear, channelled. Flowers rose, sweet scented, sometimes solitary but usually in a panicle. Petals contiguous, toothed. Scales of calyx 4, short, broad, shortly mucronate. Calyx 25-30 mm. long. Capsule cylindrical.

Represented in the Var by the sub-species **D. virgineus** L., which has non-contiguous petals, and 4-6 calyx scales. Woods and hill-sides. June-September.

**D. silvestris** Wulf. Sometimes considered a sub-species of **D. Caryophyllus**. It is dwarfer, more tufted, with 2 small scales to the calyx, and a slight scent. Flowers bright pink and rather large, 1-3 on longish peduncles. Leaves narrow, linear, acute.

Mountains in Alpes-Marit. June-August.



**D. hirtus** Vill. Leaves rough, linear, channelled in upper portion with 3-5 prominent nerves. Calyx scales half its length, scarios, ovate-lanceolate. Petals non-contiguous, limb toothed, slightly hairy at the throat. Flowers bright red, rather small. A hairy plant.

Stony places and grassy slopes. June-September. Local.

\*\* *Flowers in pairs or clusters.*

**D. Seguieri** Vill. Stem 12-18 in. high, branching, angular. Leaves linear, flat, in tufts. Flowers pink, with a purple circle round the centre, in heads of 2-4. Scales long, with erect, spreading point, equalling the tube of calyx. Calyx rather long with sharp lanceolate teeth. Petals hairy at throat, deeply toothed.

Dry, bushy places in the lower Maritime Alps and hills. June-August.

**D. Balbisii** Ser. = **D. liburnicus** G.G. Stem 1-2 ft. high, with ligneous stock. Leaves with sheath twice as long as broad. Scales equalling the calyx, coriaceous at base and with herbaceous point. Flowers red, spotted with purple, subsessile, in dense clusters amidst herbaceous bracts. Capsule cylindrical.

Woods, stony hills, and waste places. May-July, and sometimes until November in the Var.

**D. Carthusianorum** L. About 1½ ft. high. Leaves linear-acute, the stem leaves with long sheath. Flowers a deep red, or carmine, subsessile, 2-8 in a dense panicle, surrounded with coriaceous bracts. Scales scarios, the point reaching the centre of calyx tube, which is dark purple. Petals hairy at throat, toothed. Capsule cylindrical.

Hill-sides and stony bushy places in the Maritime Alps and very rarely in the Var (at Pourcieux). May-September.

**D. Armeria** L. Deptford Pink. A hairy biennial species 1-1½ ft. high, erect, stiff. Leaves linear-lanceolate, hairy, with sheath as broad as long. Flowers pinkish-red, spotted with white, small, subsessile, 2-8 in dense clusters, with herbaceous bracts as long as the flowers. Calyx scales herbaceous, hairy, as long as the calyx. Capsule cylindrical.

Sandy woods and grassy places. June-August. Local.

Several other species occur in the Maritime Alps, but beyond the limits of this work.

### HOLOSTEUM L.

**H. umbellatum** L. A small annual glandular plant, almost glaucous. Leaves oblong-lanceolate, sessile; cauline leaves very few. Flowers few, erect, white or pinkish, small in a terminal umbel with unequal pedicels, deflexed after flowering. Sepals white, edges scarios, obtuse.

Sandy or stony fields. March-May. Near Fréjus, Ampus, Châteaudouble, near Grasse, etc.

### CERASTIUM L.

\* *Petals at least twice as long as calyx.*

**C. arvense** L. Field Chickweed. Leaves linear-lanceolate, pubescent. Stems hairy all round, tufted, ascending. Bracts and sepals subacute; bracts broadly scarios at margin. Petals bifid. Flowers numerous, white, in loose cymes. Sepals oblong-lanceolate, glandular. A very variable plant.

Uncultivated places and stony slopes. April-September.

\*\* *Petals about as long as the calyx.*

**C. triviale** Lk. (**C. vulgatum** L.). Mouse-ear Chickweed. Leaves ovate-oblong, hairy like the stems. Bracts scarios at margin, much shorter than the pedicels. Sepals obtuse, shorter than the bifid petals. Capsule curved, twice length of calyx. Plant more or less viscid like the next.

Grassy places, borders of fields, etc. March-September.

**C. glomeratum** Thuill. (**C. viscosum** L.). Broad-leaved Mouse-ear Chickweed. A yellowish-green annual, closely allied to the last and covered with spreading hairs. Stems sometimes nearly a foot long, erect or ascending. Leaves oval or oblong, very obtuse. Flowers small, in a dense cyme. Bracts herbaceous. Sepals lanceolate-acute, very hairy. Capsule straight.

Sandy fields and dry places, very common. March-June.

**C. brachypetalum** Desportes. Annual. Leaves ovate-oblong, covered with long soft hairs. Bracts herbaceous, much shorter than pedicels. Sepals acute, hairy to the top, about as long as the bifid petals. Capsule curved, half length of calyx.

Sandy fields and dry slopes, occasional. April-July.

**C. pumilum** Curt. A small bright green annual, downy and viscous. Leaves oval or oblong. Bracts scarcely scarious, much shorter than the pedicels. Sepals acute, not hairy at the top. Capsule cylindrical, almost straight. Polymorphic, like most of the genus.

Fields and sandy places. April-July.

**C. semidecandrum** L. A pale green annual, downy and viscous, rather taller than the last. Leaves oval or elliptic. Fruiting pedicels reflexed, much longer than the bracts or sepals, which are broadly scarious at margin. Petals shorter than sepals, emarginate.

Sandy fields and grassy places. March-May.

**C. siculum** Guss. A pale green annual, downy and viscous. Stems stiff, erect. Lower leaves elliptic, oblong, upper ones broader and shorter. Flowers small, petals linear. Pedicels always erect and shorter than calyx. Bracts herbaceous. Sepals lanceolate-acute, with glabrous summit. Capsule slightly curved, stiff, twice length of calyx.

Grassy places and maritime sands, local. April-May. Several places near Hyères and Toulon.

**C. quaternellum** Fenz. = **Mœnchia erecta** Gaertn. A small glabrous and glaucous annual with stiff wiry stems which are almost simple. Leaves linear-lanceolate, acute. Flowers small, tetramerous, 1-3 at top of long peduncles. Sepals 4, lanceolate-acute, scarious at border. Petals 4, shorter than sepals, 4 stamens, and 4 styles opposite the sepals.

Sandy or grassy places, April-May. Occasional.

### STELLARIA L.

**S. media** L. Common Chickweed. This plant, found almost throughout the world, is abundant and very variable in crops and on cultivated ground throughout the district. It flowers almost throughout the year.

**S. Holostea** L. Greater Stitchwort, *Stellaria*. A rather rampant plant, 1-2 ft. high, growing in dense masses. Leaves sessile, lanceolate-acute, stiff, rough at edges; bracts herbaceous. Flowers large, petals deeply bifid, twice length of sepals, pure white. Capsule subglobular.

Mountain woods, very local. April-June.

**S. uliginosa** Murr. Bog Stitchwort. A glabrous and glaucous species, 6-12 in. high, slender. Leaves subsessile, lanceolate, ciliate at the base. Flowers small. Petals shorter than calyx. Bracts scarious at borders, glabrous.

Damp places in the lower mountains of Alpes-Marit. June-July.

**S. graminea** L. is recorded from one or two places in Alpes-Marit.

**S. aquatica** Scop. = **Malachium aquaticum** Fr. Stems diffuse, decumbent, angular, slightly glandular above. Leaves ovate-cordate, membranous, lower ones shortly petioled, acute, sometimes ciliate. Flowers rather large, axillary; lobes of petals diverging. Capsule long, ovoid; pedicel deflexed, tip curved. It often covers much ground.

Borders of streams in the lower mountains of Alpes-Marit. June-August. Very rare. Mons. Burnat doubts Ardoino's records of this plant.

## MÆHRINGIA L.

**M. muscosa** L. Stems fragile, prostrate or ascending, in grass-like masses, glabrous like the whole plant. Leaves narrowly linear or acicular, acute, 1 obscure nerve. Flowers small, white, 1-3 in loose cymes. Petals 4. Calyx teeth 4, ovate-lanceolate, acute 1 nerved with membranous margin. Stamens 8. Styles 2. Capsule 4 valved.

Damp rocks in the mountains, ascending to the Alps. May-July. In the Var it grows on the summit and north side of the Mont de la Chens.

**M. dasyphylla** Bruno. Leaves rather thicker and shorter, nerveless. Sepals ovate-lanceolate, sub-obtuse, obscurely 3 nerved. Pedicels capillary, long. Petals 4, longer than the sepals. Slightly ligneous root-stock.

Mountain rocks. Rare. Châteaudouble, Gorges du Verdon et d'Artuby, Gorge de Saorgio, and near Briga.

## ARENARIA L. SANDWORT.

**A. trinervia** L. = *Mœhringia trinervia* Clairv. Three-nerved Sandwort. A slender downy annual, 1 ft. high. Leaves shortly petioled, ciliate, ovate-acute, usually 3 nerved. Pedicels 3 times length of flowers, at length deflexed. Flowers very small, in loose leafy dichotomous cymes. Sepals lanceolate-acuminate, 3 nerved. Stamens 10. Capsule oval, with 6 recurved teeth.

Damp woods and shady places in the hills.

**A. serpyllifolia** L. Thyme-leaved Sandwort. A downy annual 3-10 in. high. Leaves sessile, ovate acute, 1 nerved. Flowers small, petals shorter than calyx. Pedicels twice length of calyx, at length spreading. Sepals lanceolate-acute, 3 nerved. Capsule oval, with 6 erect teeth. Very variable.

Sandy fields and slopes. May-July.

The sub-species **S. leptocladus** Guss. grows in several places near Hyères.

**A. modesta** Dufour grows near Toulon, Solliès-Toucas, etc.

**A. cinerea** DC. Greyish with short down. Stems numerous, 6-10 in. high. Lower leaves oblong, upper ones linear-lanceolate, ciliate at the base, 1 nerved. Flowers white, on pedicels 4-6 times length of calyx. Sepals ovate-lanceolate, with 1 nerve becoming prominent after flowering.

Rocky places in the mountains, rare. June-August. Sigale, Le Mas, La Bastide on east side of Mont Brouis.

**A. capitata** Lam. Leaves lanceolate, acute, white-edged, stiff, imbricate. Sepals membranous. Petals rather longer than calyx. Flowers white, sessile, in short terminal heads. A very small tufted plant with woody root-stock.

Dry hill-sides in the mountain region, rare. June-August. Barjols, Montrieux, La Sainte-Baume, Ampus, mountains above Nice and Menton, etc.

**A. massiliensis** Fenz. = *Gouffelia arenarioides* Rob. et Cast. Grows on rocky hills in the West of the Var and also near Marseilles. It is peculiar to the South of France and flowers in April or May. It is a glabrous, slender biennial. Leaves linear-spathulate, obtuse, the stem leaves linear-lanceolate, ciliate at base, 3-nerved. Flowers white, on capillary pedicels. Capsule obovate, 2-valved, each with 2 small teeth.

## ALSINE Wahl.

\* Leaves linear, petals about equalling the calyx.

**A. tenuifolia** Crantz. Fine-leaved Sandwort. Annual, very polymorphic, glabrous or pubescent—glandular. Leaves linear, setaceous; sepals green, 3 nerved. Petals much shorter than calyx. Flowers very small, in a cyme or panicle.

Sandy fields and slopes. May-July, Common in both Departments. Several varieties occur in the Var.



**A. fasciculata** *Mert. et K.* = **A. Jacquini** *Koch.* Usually glabrous. Annual or biennial. Stems stiff, erect, branching towards the top. Leaves linear, setaceous. Bracts as long as the pedicels. Sepals whitish with one green nerve. Flowers small, in compact clusters. Stamens 10. Capsule oblong-conical, equalling or shorter than calyx. Seeds tuberculous.

Rocks and stony slopes in the hills and mountains of Alpes-Marit. Very rare. June-August. Ardoino's records are doubted by Mons. Burnat, but we believe we have gathered it ourselves in the district of San Dalmazzo di Tenda, growing with the next species.

**A. rostrata** *Koch.* = **A. mucronata** *DC.* Stems loosely caespitose in habit. Leaves in tufts, linear, subulate, stiff. Sepals almost entirely scarious, white with 2 green stripes on the back, lanceolate-acuminate, 1 nerved. Bracts shorter than pedicels. Flowers in small, loose corymbs, white. Plant often glandular.

Stony slopes and rocks, in the lower mountains. May-August. Common about San Dalmazzo di Tenda. La Sainte Baume.

*\*\* Leaves linear, petals longer than the calyx.*

**A. verna** *L.* Vernal Sandwort. Usually pubescent, glandular. Root-stock not woody. Stems in dense tufts, 2-6 in. high, slender. Leaves green, linear-subulate, stiff; upper ones shorter and broader. Flowers in loose forked cymes; pedicels usually rather downy. Sepals with 3 prominent nerves, pointed. Petals obovate, spreading beyond the points of the sepals, white. Capsule 3 valved.

Damp, stony places in the Maritime Alps, rarely below 1000 m. July-August.

**A. Villarsii** *Mert. et K.* Stems 5-10 in., 3-7 flowered, slender. Leaves linear, flat, 3-nerved with intermediate finer nerves. Flowers rather larger, on very long pedicels. Petals long and narrow, obtuse. Sepals lanceolate-acute, with 3 nerves. Capsule ovoid. Seeds tuberculous.

Rocky places in the mountains, especially on limestone. June-August. La Sainte-Baume, Mount de la Chens, Aiguines and frequently in the Maritime Alps.

**A. liniflora** *Heg.* Root-stock woody. Sepals with nerves slightly beyond the middle. Capsule longer than the calyx. In other respects this species is similar to **A. laricifolia** *Crantz* and both have rather large pure white flowers.

Rocky places on limestone mountains. July-August. Margès and summit of la Cabrière in the Var, and more frequently in the Maritime Alps.

**A. laricifolia** *Crantz* is not found in the Var, but on granite mountains in Alpes-Marit. The nerves of the sepals are longer, and the capsule shorter than in the last.

Rocky places of granitic Alps, sometimes descending the streams into the montane zone. July-August.

#### BUFFONIA *Sauv.*

**B. perennis** *Pourr.* Perennial, with ligneous root-stock. Sepals oval, lanceolate-acuminate, with 5-7 nerves extending almost to the tip. Stamens 8, the filaments being half the length of the sepals.

Dry rocky places, near Fréjus, Seillans, La Garde Freinet, etc. July-September.

**B. macrosperma** *Gay.* Annual, with slender root. Sepals 5 nerved, of which 3 are prominent and longer. Stamens 4, the filaments being a quarter the length of the sepals.

Stony slopes and sea-sands. June-September. Draguignan, Le Luc, Fréjus, Toulon.

**B. tenuifolia** *Pourr.* Annual, allied to the former, but smaller and more delicate. Sepals 3 nerved, joining well below the tip, narrow, lanceolate; very acuminate. Stamens 2 or 3, the filaments being a sixth of the length of the sepals.

Fields and dry slopes. July-September. Hyères, Le Luc, Ampus, etc.



## SAGINA L.

**S. procumbens L.** Procumbent Pearlwort. A small glabrous procumbent weed. Leaves linear, almost subulate, sometimes ciliate. Flowers very small, usually solitary, on long capillary pedicels. Sepals spreading, obtuse. Petals shorter and often wanting. Capsules as long as or rather longer than sepals.

Damp, sandy places, ascending to the high mountains. April-October.

**S. apetala L.** Small flowered Pearlwort. A small annual procumbent weed with glandular hairs on the pedicels, calyces and upper part of the stems. Primary and lateral shoots all flowering. Radical leaves sub-rosulate. Leaves linear-aristate. Petals minute or 0, when present they are green. Pedicels capillary. Sepals outspread in form of a cross when capsule is "ripe".

Damp, sandy places, paths, etc., very common. April-November.

**S. maritima Don.** Sea Pearlwort. Leaves shorter and broader than the last, glabrous and not aristate. Pedicels very long, always erect, glabrous. Sepals all obtuse.

Maritime sands and sandy fields. April-August.

**S. subulata Presl.** is very rare and occurs at Tanneron and near La Seyne.

## SPERGULA L.

**S. arvensis L.** Corn Spurrey. Annual weed with forked or fascicled branches; pubescent, glandular. Leaves apparently whorled, linear-subulate, rather fleshy. Stipules small, scarious. Sepals oval, obtuse. Seeds subglobular, with narrow winged border.

Sandy fields. March-September.

**S. pentandra L.** A glabrous or glabrescent species. Leaves linear, acute, fascicled, not channelled beneath. Stipules very short. Seeds bordered with a very broad wing.

Sandy fields in the crops. April-June.

## SPERGULARIA Pers.

**S. marginata Kittel.** Sea Sandwort-Spurrey. Plant usually glabrous. Leaves almost cylindrical, sub-acute. Stipules usually entire. Pedicels long. Capsule twice as long as calyx or less. Seeds orbicular, smooth, margins thickened and broadly winged. Flowers pink or lilac.

Maritime sands and fields flooded in winter. May-August.

**S. rubra Pers. = Alsine rubra Crantz (1766).** Field Sandwort-Spurrey. Annual or biennial. Leaves linear, flat, with short scarious stipules at base. Stem much branched from the base. Capsule equalling the calyx. Flowers rose coloured or pink, in racemose cymes. Mons. Foucaud has named 2 subspecies from the Var, viz. **S. arenosa** and **S. Bocconei**.

Sandy or gravelly places. April-August. Very variable in the Var.

**S. segetalis Pers.**, very rare; **S. Dillenii Lebel**, **S. media Pers.**, and **S. Heldreichii Fouc.** also occur.

## POLYCARPON L.

**P. tetraphyllum L.** Four-leaved Polycarp. A small and usually prostrate annual. Leaves flat, ovate, opposite or whorled in fours. Stipules scarious. Flowers small, 3-androus in crowded cymes. Sepals 5, keeled, entire. Stamens 3-5. Ovary 1 celled; style short, 3-fid.

Fields and sandy places, road-sides, etc. Fairly common in the littoral region and very variable. May-July.

## SCLERANTHUS L. (Formerly placed in Paronychiaceæ.)

**S. annuus L.** Annual Knawell. A low tufted annual, greyish-green in colour. Leaves small, recurved, base often ciliate. Flowers minute, pale green,

solitary in the lower axils, fascicled in terminal dichotomous cymes. Calyx lobes suberect in fruit, acute, with narrow membranous margin.

Sandy fields, common. May-June.

**S. perennis** L. Leaves opposite, linear, connate at the base. Calyx teeth almost obtuse with broad scarious white margins, connivant at maturity. Flowers greenish-white. More glaucous than the last with shorter bracts.

Dry, sandy places, especially in the hills, local. May-July.

**S. verticillatus** Tausch. Grows in crops near St. Raphael and Ampus.

### CORRIGIOLA L.

**C. littoralis** L. Strapwort. Leaves linear-lanceolate, narrowed into an obscure petiole. Stipules small, half-sagittate. Flowers in crowded terminal cymes. Petals as long as sepals. Plant small, slender, prostrate.

Damp sandy places in the Var. April-July.

**C. Telephifolia** Pourr. Leaves oblong, glaucous, thick; those of the rosette spatulate. Stems numerous, prostrate, slender. Flowers very small, pinkish-white, pedicelled in heads at the top of the leafless branches.

Sandy places, on railways, etc., uncommon. March-June.

### HERNIARIA L.

**H. glabra** L. Rupturewort. Leaves small, oblong, glabrous or glabrescent. Stems many, 4-6 in., tufted, more or less glabrous. Root woody. Flowers very small, green, sessile, in lateral, dense, oblong heads throughout the length of the branches.

Sandy places, fallow fields, etc. May-August.

**H. hirsuta** L. Leaves elliptic-oblong, hirsute, ciliate, greyish. Stems slender, often quite prostrate. Calyx teeth hairy and ending in one long hair. Lower leaves opposite. Flowers small, sessile in very small heads in the leaf axils. Annual.

Damp, sandy places, common. May-July.

The Var. **cinerea** Loret et Barr. = **H. cinerea** DC. is not uncommon in the Var.

**H. incana** Lamk. Leaves rather larger, oblong-lanceolate. Whole plant covered with a whitish tomentum. Calyx hispid with silky hairs. Flowers shortly pedicelled.

Dry, sandy, grassy places. May-July.

### PARONYCHIA Lamk.

**P. cymosa** Lamk. A small slender annual, with dichotomose branches. Leaves linear, rather fleshy, aristate, whorled. Stipules very small. Bracts shorter than the small greenish-white flowers. Sepals scarious at the top.

Pine-woods and sandy places. May-July.

**P. echinata** Lamk. A small stiff annual. Leaves oval, opposite, mucronate, toothed. Bracts shorter than the greenish flowers. Stipules triangular-lanceolate. Sepals concave, scarious at the borders, almost spiny at the tip.

Hot, sandy places and hill-sides among Cistus, etc. April-June.

**P. capitata** Lamk. var. **Kapella** G.G. grows on rocky places near Plan d'Aups and Saint Pilon on the Sainte-Baume range. Owing to its silvery appearance it was wrongly placed by Hanry and Robert under **argentea**.

**P. argentea** Lamk. A larger species, 9-12 in. long, pubescent. Leaves opposite, oval-lanceolate, ciliate, otherwise nearly glabrous. Stipules oval-acuminate, shorter than the leaves. Flowers very silvery, in dense lateral and terminal heads. Bracts ovate-acuminate, scarious, silvery.

Dry places in the Var, rare. May-July. Toulon and Porquerolles.

## TELEPHIUM L.

**T. Imperati L.** Plant glabrous and glaucous, rather fleshy, about a foot long, with numerous spreading, simple, leafy stems. Leaves alternate, oblong, thick, almost unilateral, with short membranous stipules. Flowers white, rather large, in dense heads at the top of the stems. Sepals 5, linear-oblong, keeled, branous at the edges.

Dry stony places on limestone mountains, rare. May-July. Garde-Freinet near Aiguines, Raton near Ampus, in the Briga valley near S. Dalmazzo di Tenda, etc.

## PORTULACACEÆ.

## PORTULACA L.

**P. oleracea L.** A fleshy, annual, prostrate plant. Leaves opposite or the upper ones alternate, obovate-oblong, sessile, thick, shining. Flowers small, sessile, yellow, solitary or in clusters at the axes and tops of the branches. Sepals 2, unequal, obtuse, keeled beneath the top finally falling. Petals 4-6. Capsule ovoid, opening transversely. Seeds numerous, black, shining.

Fields, garden-paths and road-sides. Common. May-September.

**Montia minor Gmel.** and **M. rivularis Gmel.** are occasionally found by streams and other damp places on the littoral.

## TAMARICACEÆ.

## TAMARIX L. TAMARISK.

**T. gallica L.** Shrub 6-25 ft. high, with slender, reddish branches. Leaves on the branchlets very minute, closely imbricate, triangular, auricled, keeled; on the older wood much larger, subulate. Flowers white or pink, very small, in obtuse dense spikes. Stamens 5.

Borders of streams and ditches near the coast. May-July.

**T. africana Poir.** (Plate XVI.) A smaller shrub 6-10 ft. high, with less feathery branches. Leaves very small, imbricate, oval-acuminate, membranous at the edges. Flowers larger than in the last. Stamens prominent, 5. Capsule gradually tapering.

Sea coasts, and never far from the sea. May-June.

**T. germanica L. = Myricaria germanica Desv.** A small shrub 3-6 ft. high with slender branches in bundles. Leaves very small, like needle-shaped scales. Flowers pale pink in long spikes. Style none. Seeds with a short stalked plume. Stamens 10.

River beds such as that of the R. Var. June-July.

## MALVACEÆ.

Calicule inserted on the peduncle; carpels in a globular head.....MALOPE.

Calicule inserted on base of calyx; bracteoles 3, distinct .....MALVA.

Calicule inserted on the peduncle; bracteoles 3, connate at base .....LAVATERA.

Calicule inserted on the peduncle; bracteoles 6-9, connate .....ALTHÆA.

## MALOPE L.

**M. malacoides L.** A rather hispid plant, a foot high. Leaves oval-lanceolate, often heart-shaped at base, irregularly toothed or lobed. Peduncles solitary at the axils of the leaves. Bracteoles cordate-acuminate. Petals entire, 1 in. long, deep rose. Flowers handsome.

Waste places, here and there, rare. April-June. It not infrequently appears singly.

## MALVA L. MALLOW.

**M. Alcea L.** Plant 2-3 ft. high, covered with hair. Lower leaves sub-orbicular. Stem-leaves simply lobed or deeply palmatifartite. Peduncles single



at the leaf axils. Flowers rose, large, solitary; petals 4 times longer than the calyx. Calicule of ovate bracteoles. Carpels streaked, glabrous.

Borders of fields and woods. June-August. It reaches 3000 or 4000 ft. in the Alps, and is very polymorphic.

**M. moschata** L. Musk Mallow. Hairy, erect, 2-3 ft. high. Leaves 5-7 partite, segments pinnatifid, long petioled. Flowers large, pink, rarely white. Peduncles erect in fruit; carpels smooth, back rounded, hispid.

Road-sides, woods, and waste places. June-August. Especially in the hills.

**M. silvestris** L. Common Mallow. Biennial. Leaves 3-7 lobed, crenate-serrate, hairy. Peduncles spreading. Carpels glabrous, reticulate, usually 10, flat at the back. Flowers large, reddish-purple or magenta, irregularly fascicled. Corolla lobes distant, deeply notched.

Road-sides and waste places, common. April-August.

**M. nicæensis** All. Upper leaves cordate-orbicular, lobes acute. Flowers pale pink or mauve, small, in axillary clusters. Bracteoles broad, oval-lanceolate. Carpels reticulate. Stems 1-2 ft. high.

Borders of roads and rubbish heaps. April-July.

**M. rotundifolia** L. Round-leaved Mallow. Annual or biennial. Leaves cordate-orbicular, scarcely lobed. Bracteoles linear. Petals twice as long as calyx, pink. Flowers small. Carpels smooth or downy, rounded at the back to form a disk-shaped fruit. May-August.

Near houses, road-sides, etc. May-September.

**M. parviflora** L. Small-flowered Mallow. An annual, differing from the last in the carpels being reticulated, striated, toothed, and not rounded but flat at the back, the petals being scarcely longer than the calyx.

Waste places, road-sides, etc. April-July.

### LAVATERA L.

**L. arborea** L. Tree Mallow. A stout bushy plant, 3-8 ft. high. Leaves suborbicular, 5-9 lobed, crenate, softly pubescent, long petioled, lobes broad, short; upper leaves more entire. Peduncles crowded, axillary, 1 flowered. Flowers  $1\frac{1}{2}$  in. diameter, purple-red, with glossy purple-black centre and veins. Epicalyx with 3 large ovate downy lobes.

Maritime rocks, old walls, and banks. March-August.

**L. cretica** L. A smaller herbaceous plant 2-4 ft. high. Leaves cordate-orbicular, lobed, velvety. Peduncles crowded, axillary. Epicalyx equalling the calyx. Petals twice length of calyx, deeply emarginate, lilac, with 3 prominent purple veins.

Waste places and borders of fields. April-June. Very local.

**L. olbia** L. A bushy grey-green plant, 3-8 ft. high, covered with tomentum. It has a woody stock. Leaves cordate, lobed, the upper ones hastate. Peduncles solitary in the leaf axils, very short. Carpels smooth. Flowers bright reddish-purple or magenta, in a long handsome spike; petals 2-3 times as long as calyx. A specimen between Hyères and Carqueiranne has a trunk a foot in circumference.

Road-sides, borders of fields, and rocky places. May-July. Very common about Hyères (whence it takes its name), and elsewhere in the Var. Rare in Alpes-Marit., Ile Ste. Marguerite.

**L. maritima** Gouan. Sea Mallow. A small bush with almost woody stem, 2-3 ft. high. Leaves orbicular, upper ones angular, grey tomentose in colour. Flower stalks solitary, at least as long as the leaf. Carpels rugose. Petals twice length of calyx, very pale pink, with a crimson blotch at the base.

Maritime rocks and stony places, very local. January-May. On the limestone cliffs of Coudon it reaches about 2000 ft.

**L. punctata** All. An annual greenish-grey species covered with stellate hairs. Leaves suborbicular, the upper ones hastate, trifid, with toothed lobes. Flowers large, rose-lilac, veined, solitary in the leaf axils. Petals three times as long as



calyx. Carpels glabrous, rugose, yellowish at maturity, with conical central axis.

Fields. June-July.

**L. trimestris L.** An annual, greener and rather hispid; with deeper rose large flowers, and carpels whose central axis is an orbicular concave disk.

Cultivated fields and hill-sides of the littoral, rather rare. April-July.

#### ALTHÆA L.

**A. officinalis L.** Marsh Mallow. Leaves white-tomentose or felted, scarcely lobed, but irregularly toothed. Plant 2-3 ft. high, leafy. Peduncles many flowered, shorter than the leaves. Flowers pale pink, large. Stipules falling.

Damp meadows and sides of ditches. June-September.

**A. cannabina L.** Hemp-leaved Mallow. Leaves green, hairy, with 5 deep lobes of which the central is very long. Stipules linear, persistent. Peduncles 1 or 2 flowered, longer than the leaf. Flowers red. Plant 4-5 ft. high.

Grassy places, road-sides. June-August.

**A. hirsuta L.** Hispid Mallow. A hispid annual, about a foot high. Leaves green, with 5 almost equal lobes, toothed; lower leaves orbicular-crenate. Flowers pale pink, single on long peduncles. Epicalyx with lanceolate-acute bracteoles. Carpels glabrous, rugose, rounded at the back.

Light sandy ground, borders of fields, etc. May-July.

**A. pallida W. et K.** is an Eastern species, now spread here and there in the Var. Plant 3-6 ft. high, robust. Leaves green. Flowers very large, red.

**Abutilon Avicennæ Gaertn.**, has been found near Toulon and Hyères, probably naturalized. **Hibiscus Trionum L.** is an Eastern and Italian plant found in fields by the R. Gapeau near Hyères (not native).

#### HYPERICACEÆ.

Sepals very unequal; stamens in 5 bundles.....ANDROSÆMUM.

Sepals almost equal; stamens in 3 bundles .....HYPERICUM.

#### ANDROSÆMUM L.

**A. officinale All. = Hypericum Androsæmum L.** Tutsan. Shrubby. 1-2 ft. high. Leaves sessile, ovate or oblong, 1-3 in., glands very minute, close. Petals very oblique, yellow. Cymes corymbose, few flowered. Buds often red. Sepals large, oval-obtuse, not ciliate. "Berry" black when ripe.

Damp woods and ravines in the hills and mountains. June-July.

#### HYPERICUM L. ST. JOHN'S WORT.

\* *Sepals entire or nearly so.*

**H. perforatum L.** Common St. John's Wort. Stem erect, 2 ridged, 1-3 ft. Leaves oblong, with pellucid glands and veins. Sepals acute, glandular, entire. Styles as long as the capsule. Cymes corymbose, many flowered. Flowers 1 in. diameter, bright yellow.

Fields and hill-sides, very common. May-July.

**H. tetrapterum Fr. = H. quadrangulum DC. = H. acutum Manch.** Square stalked St. John's Wort. Stem erect, narrowly 4 winged, 1-2 ft. Leaves broadly ovate or oblong, sometimes cordate, glands pellucid. Sepals lanceolate-acuminate eglandular; styles shorter than the capsule. Cymes dense-flowered.

Moist places and borders of streams. June-August.

**H. australe Ten.** Stems ascending, 8-12 in., often reddish. Leaves elliptic or linear oblong, obtuse, edged with black dots, glaucous above. Sepals oblong-lanceolate, acute, slightly glandular-ciliate, almost entire. Flowers large, yellow veined with red. Capsule ovate, slightly longer than calyx.

Grassy slopes and sandy places. May-June.



PLATE IX.

1. *Cneorum tricoccon*.

2. *Pistacia Lentiscus* in fruit (*a*, male flower)

4. *Ruta angustifolia*.

5. *Oxalis cernua*.





\*\* *Sepals toothed or ciliate-glandular.*

**H. tomentosum** *L.* Leaves oval, embracing the stem, oval-obtuse, white-felted, glands pellucid. Sepals acuminate. Stems ascending or prostrate. Flowers rather large, in a loose corymb. Sepals lanceolate-acuminate, very acute, shortly ciliate.

Damp places, local. May-July.

**H. montanum** *L.* Mountain St. John's Wort. Stem 1-2 ft. high, terete, almost glabrous like the leaves, which are sessile, oblong-obtuse, with marginal black glands, glaucous beneath, the upper ones cordate-ovate or linear oblong. Sepals lanceolate-acute. Stems rigid, slender, often leafless above. Flowers pale yellow, fragrant. Petals eglandular or nearly so.

Mountain woods, descending sometimes almost to the coast as at Menton. June-August.

**H. perfoliatum** *L.* is a larger plant with half-amplexicaul ovate-lanceolate cordate leaves, and deeply fringed sepals, which occurs rarely in the Var on wooded slopes. May-June.

**H. hyssopifolium** *Vill.* Leaves linear, the upper ones fascicled, glabrous, edges rolled in. Flowers pale yellow in a long panicle. Sepals strongly glandular-ciliate, elliptic. Capsule ovate-acuminate, 3 times length of calyx.

Dry slopes and rocky limestone mountains. June-July. Rather rare.

**H. Coris** *L.* (Plate VIII). Plant glabrous, greyish-green, 6-12 in. high. Leaves in bundles of 3 or 4, narrow linear, spotted, with edges rolled in. Flowers bright yellow streaked with red, rather large, in a short corymb. Sepals linear oblong, obtuse, glandular toothed. Capsule oval, twice length of calyx.

Arid slopes and limestone rocks. June-July.

TILIACEÆ.

TILIA *L.* LIME.

**T. platyphylla** *Scop.* = **T. grandifolia** *Ehrh.* A tree of considerable height with pilose twigs, leaves downy beneath, fruit obovate-globose, with 3-5 prominent ribs when ripe.

Mountain woods, rare. June-July.

**T. ulmifolia** *Scop.* = **T. parvifolia** *Ehrh.* A tree, differing from the last chiefly in its leaves being glabrous and glaucous beneath, suborbicular, and its smaller fruit with no prominent ribs.

Woods in the mountains and hills. June-July.

Sub-division II. DISCIFLORÆ.

LINACEÆ.

Sepals 5, quite entire, but often ciliate ..... LINUM.  
 Sepals 4, 2-4 toothed ..... RADIOLA.

LINUM *L.* FLAX.

\* *Flowers white, pink, or blue.*

**L. catharticum** *L.* Cathartic Flax. A small, slender annual. Leaves opposite, glabrous, rather glaucous, upper ones alternate, linear-oblong. Buds nodding. Petals small, oblong, white, distinct.

Woods and rather damp sandy places. May-July.

**L. angustifolium** *L.* Leaves smooth at borders, alternate, narrow linear lanceolate. Sepals ovate-acuminate, inner ones ciliate, 3 nerved. Flowers blue; petals obtuse. Anthers suborbicular. Stems 1-2 ft. high, with divaricate

branches. Leaves fewer and smaller than in *L. perenne*, which is not found in France.

Grassy places and dry slopes, ascending to 1100 m. in Liguria. May-July.

*L. alpinum* *L.* grows in the Maritime Alps, and the var. *collinum* *Guss.* is found at lower elevations in fields near Ampus and Solliès-Toucas in the Var.

*L. narbonense* *L.* (Plate VIII). Leaves alternate, linear-lanceolate, acute, greyish-green, with strong midrib and a distinct margin. Upper floral leaves often with scarios margin. Sepals lanceolate, not ciliate, with white scarios margin. Flowers an inch across, blue, on slender pedicels. Petals ovate, very briefly apiculate. Stigmas long, filiform. Plant 18 in. high, on a sub-ligneous base.

Woods and dry slopes. May, June. Also in the mountain region. We believe this species has often been confused with the next, and that the large flowers are usually a beautiful *pale* blue, as they appear in quantity above Géménos towards the Col de Bretagne (Bouches du Rhône).

*L. austriacum* *L.* Root-stock woody, with many erect stems 2 ft. high. Leaves narrow, linear-lanceolate, 1 nerved, glaucous, with more or less scabrous edges. Flowers an intense blue, in racemes almost forming a corymb. Petals obovate, rounded, more than twice length of calyx. Sepals oval, outer ones acute, inner ones broader and with white, scarios margin. Pedicels arched and pendent after flowering.

Mountains and dry hills in Alpes-Marit. and Liguria, rare. May-July.

*L. salsoloides* *Lamk.* = *L. suffruticosum* *DC.* (non *L.*). Plant woody at the base, shrubby, 4-8 in. high, stems sometimes purplish. Leaves crowded at base, linear-acute, small, with a few very minute teeth at edges. Flowers large, light flesh-colour or white, almost in a corymb. Petals 4 times as long as sepals, obovate, narrowing into a long claw, which is pink or pale violet outside. Sepals ovate, acuminate, sometimes reddish-green, with glandular cilia on the edges, and a strong midrib. Anthers pale yellow, oval.

Rocky hills and woods, especially on limestone, from near the sea to about 1400 m. June-July. *L. suffruticosum* of Linnaeus (not *DC.*) which name is given to this plant in Ardoino, "Flore des Alpes-Marit.," is a distinct species from the S. of Spain.

*L. tenuifolium* *L.* Slender-leaved Flax. Stems erect on a sub-ligneous base. Leaves close, linear-acute, scabrous at edges, with short hairs turned towards apex. Sepals often reddish, oval, acuminate, keeled, ciliate, glandular. Flowers in a branched raceme, pale pink or lilac, or white tinged with lilac. Petals obovate, briefly acuminate and often notched. Capsule small and globose. Mr. Bicknell says, "this plant is distinguished from the last, which it much resembles, and with which it seems to have been long confused, by its greater height, more scattered, larger, and broader leaves, by its smaller and more numerous flowers, by its violet anthers inserted above the base and not in the middle of the back, and by its smaller capsule."

Dry stony hills. May-July. Above Menton, Nice, Bordighera, etc., and near Roquebrune and Toulon in the Var.

*L. viscosum* *L.* Viscous Flax. Plant glandular hairy; stems 1-2 ft. high, from a thick root-stock. Leaves alternate, oblong-lanceolate, glandular-ciliate. Sepals ovate-acuminate, ciliate-glandular, 3 nerved, twice length of capsule. Flowers large, pink, veined with violet. Capsule globular-apiculate.

Mountain pastures in Alpes-Marit. and Liguria. Common in the chestnut zone and descending sometimes to near the sea, as near Ventimiglia. It reaches 1200 m. in Liguria. May-July.

\*\* Flowers yellow.

*L. maritimum* *L.* (Plate VIII). Leaves linear-lanceolate, glabrous, 3 nerved, lower ones opposite, upper alternate. Flowers yellow, in racemes forming a corymb. Sepals ovate, shortly acuminate, ciliate-glandular. Petals 2 or 3 times

length of calyx, obovate. Capsule globose, almost as long as calyx. Stems 6-12 inch.

Damp sandy fields near the sea. June-August.

**L. campanulatum** *L.* Root-stock woody. Stems 4-12 in. high, stiff, angular. Lower leaves obovate, spatulate, in a rosette, upper ones lanceolate-acute, with very narrow transparent, membranous edges, and two small glands at their base. Flowers few, subsessile, large, rather pale yellow with delicate orange veins. Petals obovate, with long connate claws. Sepals lanceolate-acuminate, ciliate, dentate or smooth.

Dry hills, especially on limestone. April-July according to situation. A beautiful and very desirable plant to introduce into rock gardens in sunny places. The flowers are often  $1\frac{1}{4}$  in. across.

**L. nodiflorum** *L.* Annual, 1 ft. high or more. Leaves spatulate, scabrous at the borders, with 2 small glands at the base. Flowers pale yellow, subsessile, distant, in long erect corymbs. Sepals linear, 3 times as long as capsule. Claw of petals united.

Dry hill-sides and fields, local. April-July.

**L. gallicum** *L.* Annual, with erect stems 6-18 in. high, slender, glabrous. Leaves few, linear-lanceolate, scabrous at edges, 1 nerved. Flowers small, yellow, in a loose raceme. Petals obovate, spatulate. Pedicels equalling the calyx. Sepals lanceolate-acuminate, ciliate-glandular at base.

Dry, sandy fields and hills. May-July.

**L. strictum** *L.* A stiff annual about a foot high, all scabrous except the stems. Stem simple or branching at base. Leaves few, linear-lanceolate, mucronate, scabrous at edges, 1 nerved. Flowers nearly sessile in corymbose cymes, yellow, small. Sepals lanceolate-acuminate, mucronate. Capsule small, globose.

Dry, stony places. May-July.

#### RADIOLA *L.*

**R. linoides** *Roth.* Allseed. A minute slender glabrous annual, 1-3 in. high. Stem branching from the base, filiform. Flowers very minute, white, axillary in a dichotomous panicle. Leaves ovate-acute, sessile, rather thick. Sepals connate below.

Damp, sandy places, especially those flooded in winter, rather rare. May-July.

#### GERANIACEÆ.

Tribe I. GERANIÆ. Flowers regular. Sepals imbricate. Stamens alternating with glands. Capsule beaked, of several 1-seeded awned cocci, which separate elastically from the beak.

Stamens 10, all antheriferous ..... GERANIUM.  
Stamens 5, staminodes 5 ..... ERODIUM.

Tribe II. OXALIDÆ. Flowers regular. Sepals imbricate. Glands 0. Capsule loculicidal; cells 2 or more seeded.....OXALIS.

Tribe III. BALSAMINÆ. Flowers irregular. Sepals coloured, spurred.  
Stamens 5. Glands 0. Cells 2 or more seeded.....IMPATIENS.

#### GERANIUM *L.* CRANE'S-BILL.

\* *Perennial. Peduncles 1 flowered. Sepals spreading.*

**G. sanguineum** *L.* Hairy. Leaves orbicular, 5-7 partite, segments narrow 3-5-fid to the middle, linear-oblong or lanceolate. Carpels hairy, seeds wrinkled and dotted. Peduncles very long, usually 1 flowered. Flowers very large, reddish-purple or magenta or rarely pink. Claw of petals bearded. Plant about 1 ft. high, covering much ground.

Woods and grassy places in the hills. May-July.



\*\* *Perennial. Peduncles 2 flowered. Sepals spreading.*

**G. pyrenaicum** L. Mountain Geranium. Stems erect, 1-2 ft. high, hairy. Leaves reniform or orbicular, 7-9 lobed, long petioled, lobes wedge-shaped, toothed, or crenate. Sepals mucronate, petals 2 lobed, small, oblong. Flowers reddish-purple. Carpels keeled, pubescent; pedicels deflexed; seed smooth.

Meadows and fresh woods in the mountains. April-July.

**G. nodosum** L. Leaves palmatifid, 3-5 lobes, crenate-toothed. Flowers pale pink or lilac, veined, large. Petals obcordate-emarginate. Peduncles longer than the leaves. Sepals finely acuminate, pubescent. Stipules long acuminate.

Mountain woods. May-August.

**G. tuberosum** L. Root tuberous, subglobular, reddish. Stems about a foot high. Leaves palmatisect, with 5-7 lanceolate pinnatifid segments, lobes entire or toothed. Flowers pale purple with darker veins. Peduncles long, usually 2 flowered. Root-leaves or long petioles; stem-leaves sessile.

Fields and vineyards, very local. March-April.

**G. macrorrhizum** L. Root-stock long and thick. Stems erect, a foot or more high. Root-leaves palmatifid, divided into 5-7 obovate-cuneate segments, toothed, pale green beneath; stem-leaves with fewer divisions and short petioles—all glabrous and shining. Flowers large, magenta colour, with long curved stamens. Calyx and pedicels often red. Calyx pubescent, inflated. Plant strongly scented. Style becoming very long in fruiting.

Stony or rocky places in mountain woods, rare. Saorgio in Roja valley, Briga, and near San Dalmazzo di Tenda. June-July.

\*\*\* *Annual or biennial. Peduncles 2-flowered. Sepals spreading.*

**G. rotundifolium** L. Round-leaved Geranium. Hairy. Leaves orbicular, 7-9 lobed, on long petioles. Sepals mucronate, generally shorter than the entire petals; claw of petals naked. Carpels keeled, hairy, not wrinkled. Seeds pitted. Flowers pale pink, quite small.

Borders of fields and waste places, very common. March-August. Commoner than either **G. molle** or **G. pusillum** which grow in similar places, though the latter is rather rare in the south.

**G. columbinum** L. Long-stalked Geranium. Nearly glabrous, 1 ft. high. Leaves 5-7-partite, lobes pinnatifid. Segments narrow. Sepals large, acuminate, awned, equalling the entire petals, claw of petals ciliate. Pedicels and peduncles very long and slender. Flowers few, rose-purple or magenta coloured.

Woods, hedges, and hill-sides. May-June.

**G. dissectum** L. Cut-leaved Geranium. Hairy and subglandular. Leaves as in the last, but petioles and peduncles much shorter, and calyx and capsules quite different. Sepals long awned. Carpels not wrinkled or keeled. Flowers axillary, bright red, small.

Fields and rather damp, shady places. April-June.

\*\*\*\* *Annual or biennial. Peduncles 2 flowered. Sepals erect in flower, conniving in fruit.*

**G. Robertianum** L. Herb Robert. Glabrous or slightly hairy, strongly scented, reddish. Branches brittle, leafy, and fleshy. Leaves 5 foliate, segments 1-2 pinnatifid. Sepals long awned. Petals entire, narrow, bright pink, streaked darker. Very variable.

Woods and stony places. May-August.

**G. lucidum** L. Shining Geranium. Glabrous, shining, often bright red. Leaves orbicular, 5 lobed. Stipules ovate, acute. Peduncles longer than petioles. Branches succulent and brittle. Carpels separating entirely from the axis, wrinkled, keeled. Flowers very small, bright pink.

Old walls and stony places. May-August.

## ERODIUM L'Heritier. STORK'S-BILL.

\* *Leaves toothed or pinnately cleft, not pinnatisect or pinnately divided down to the rachis.*

**E. malacoides Willd.** Annual, pubescent-glandular. Leaves oval, cordate base, crenate or simply lobed, lower leaves with petioles as long as the leaf. Flowers lilac, very small, 3-8 in umbels on peduncles longer than the leaves; petals oboval or sometimes in seedlings almost linear. Sepals mucronate, 35, nerved. Stipules, ovate obtuse, whitish. Very variable.

Road-sides and waste places, common. March-November.

**E. laciniatum Cav.** Annual, hairy. Leaves pinnatifid or almost pinnatifid, with many narrow segments, sharply toothed. Flowers small, in umbels on long peduncles, purple. Petals oblong. Stipules large, oval-obtuse. Sepals mucronate. Valves of carpels spinally twisted 7-8 times, 4-6 cms. long.

Sandy places near the sea, rare. May-June.

**E. Botrys Bert.** Annual, hairy-glandular, robust; stems swollen at the nodes. Lower leaves oval or oblong, inciso-pinnatifid; upper ones bipinnatifid. Flowers large, lilac-purple, veined, 1-4 on longish peduncles. Stipules small, ovate-acute. Sepals mucronate. Beak very long (8-10 cms.), valves with 2-4 concentric folds.

Fields and grassy places. April, May.

**E. Chium Willd.** Annual or biennial, downy. Leaves oval, truncate or cordate base, with 3-5 oval lobes which are toothed-crenate, the middle lobe largest. Flowers pink, rather large in umbels of 3-8. Stipules ovate-acute. Beak slender, 3-4 cms. long.

Waste places near the sea in the Var. March-June.

\*\* *Leaves all pinnatisect, with segments more or less divided.*

**E. cicutarium L'Herit.** Common Stork's-bill. Annual or biennial, rather hairy, very variable. Leaves oblong, 1-2 pinnate, leaflets pinnatifid, segments narrow-cut; stipules ovate-acuminate. Stems prostrate or decumbent. Peduncles longer than the leaves, erect. Flowers purplish-red, rose, or white, umbelled; petals rather unequal. Carpels hairy, with beak 2-4 cms. long.

Fields, road-sides, etc., very common and variable. February-November.

**E. romanum Willd.** Sometimes considered a sub-species of the last, from which it differs by its peduncles and leaves being all radical, its larger flowers with equal petals. It is a very elegant plant whose bright rosy flowers on long naked peduncles are sometimes seen in midwinter near the coast.

Road-sides and grassy places. March-November.

**E. moschatum L'Herit.** Musk Stork's-bill. A stout glandular-hairy annual or biennial smelling of musk. Stems robust. Leaves long, pinnatisect, lobes oval, inciso-dentate, subsessile; often blotched with purple at the veins. Flowers very small, pale pink or lilac, in umbels on long peduncles. Stipules ovate-acute, not acuminate.

Road-sides and waste places, common. March-September.

**E. ciconium Willd.** Annual, hairy, glandular. Leaves large, oval or oblong, pinnatisect with obtuse pinnatifid segments. Flowers purplish-blue, veined, large, 2-7 on long axillary peduncles. Stipules small, ovate-acuminate, not united. Sepals aristate, strongly nerved. Carpels with very long beak (6-8 cms.), valves without concentric folds.

Grassy borders of fields, not common. March-June.

## OXALIS L.

**O. cernua Thunbg. = O. lybica Viv.** (Plate IX). Stems and leaves all radical, slightly downy. Leaves long-petioled, with 3 broad obovate leaflets. Peduncles with several flowers in more or less of an umbel. Flowers bright lemon yellow, large. Originally from the Cape of Good Hope, this plant is well

established not only on the Riviera, where it is spreading eastward, but in Algeria, Sicily and other islands of the Mediterranean.

Waste places and cultivated ground. February-April.

**O. corniculata** L. Annual or perennial, pubescent, without stolons. Leaves all cauline, stipulate, smaller than in the last. Peduncles 3-4 flowered. Flowers rather small, yellow. Fruiting pedicels deflexed. Capsule linear-oblong, downy.

Road-sides and waste places, common. Flowering almost all the year.

**O. stricta** L. is recorded from Villefranche, and **O. floribunda** Lk., with beautiful pink flowers, is naturalized near Hyères and St. Tropez.

**O. Acetosella** L. Wood-sorrel. This well-known British plant with delicate white flowers veined with lilac, radical leaves and one-flowered radical peduncles, is rare in the Mediterranean region.

Mountain woods in Alpes-Marit. April-May.

#### IMPATIENS L.

**I. noli-tangere** L. Yellow Balsam. A fleshy, glabrous, bright green annual, 1-2 ft. high. Leaves oval, petioled, serrate-crenate. Flowers irregular, yellow, spotted with red at the throat, 3-4 on axillary slender peduncles. Calyx petaloid, of 5 unequal sepals; the posterior sepal funnel-shaped, gradually contracted into a slender spur with entire lip. Capsule of 5 elastic valves separating from the placentas and then twisting.

Shady woods in the montane region of the Alpes-Marit., rare. July.

#### ZYGOPHYLLACEÆ.

##### TRIBULUS L.

**T. terrestris** L. An annual, prostrate, creeping, downy plant. Leaves opposite, shortly petioled, pinnate, with 5-8 pairs of small elliptic leaflets. Flowers small, yellowish, regular, axillary, solitary on short peduncles. Stamens 10. Style 1, short; stigma 5 rayed. Capsule pentagonal, flat, spiny, separated into 5 spreading star-shaped, very hard divisions, each one with 4 spines.

Sandy fields near the sea, local. May-September.

#### CORIARIACEÆ.

##### CORIARIA L. (the only genus).

**C. myrtifolia** L. Shrub 6-10 ft. high, glabrous. Leaves opposite, ovate-lanceolate, entire, 3 nerved, nearly sessile. Flowers regular, small, greenish with red styles, in erect panicles. Petals 5, alternating with the sepals. Styles 5, long, filiform, reddish. Fruit black and shining when ripe.

Woods and hill-sides. April-July.

#### RUTACEÆ.

Calyx persistent; petals concave; flowers regular.....RUTA.  
Calyx falling and petals flat; flowers irregular.....DICTAMNUS.

##### RUTA L. RUE.

**R. angustifolia** Pers. = **R. graveolens** All. part (Plate IX). Glaucous, shortly pubescent, 1-2 ft. high, very fœtid, glandular in upper part. Leaves bipinnatisect, with oblong segments. Bracts lanceolate, narrower than the peduncle. Sepals obtuse. Flowers yellow; petals fringed with cilia, as long as broad. Capsule subglobular, with 4-5 acute lobes.

Dry, stony places and woods, common. May-July.

**R. bracteosa** DC. Resembles the last but is not glandular above, and is greener. Leaves larger with oblong segments, the lower leaflets like stipules and petioled. Petals broader, with finer cilia, half the width of the limb.

Old walls and dry places. April-June.



**R. montana** L. Plant smaller, glaucous, glabrous, but glandular above. Leaflets linear-obtuse. Flowers yellow, small. Bracts and sepals lanceolate-acuminate. Petals spatulate, not ciliate. Capsule small, subglobular, with 4 rounded lobes.

Dry, stony places. Local. April-July.

#### DICTAMNUS L.

**D. albus** L. Plant 2-3 feet high, very leafy in the middle, covered with glandular hairs. Leaves pinnate, with large ovate, serrate, sessile lobes. Flowers large, white or pink, veined with violet, in a long glandular spike. Petals 5, unequal, the 4 superior ascending, the lower one deflexed. Stamens 10, very long. Capsule of 5 cuspidate, deep wrinkled lobes.

Stony slopes and woods in the lower mountains. May-June.

#### AMPELIDACEÆ.

##### VITIS L.

**V. vinifera** L. Common Vine. This rampant shrub, with palmate leaves and small greenish flowers in panicles, is sometimes found in a wild state in the Esterel and Maritime Alps. It flowers in June.

In the Var it is spontaneous in woods and borders of streams near Fréjus and Le Cannet.

#### ACERACEÆ (a tribe of SAPINDACEÆ).

##### ACER L.

**A. Pseudo-platanus** L. Sycamore. This well-known tree is rarely found wild except in mountain woods in the Maritime Alps, e.g. about St. Martin Lantosque. It flowers in May. Racemes elongate, pendulous.

**A. campestre** L. Common maple. Small tree or shrub. Leaves obtusely 5 lobed, entire or crenate; wings of fruit horizontal. Flowers green, on short, erect pedicels in corymbs.

Woods and river banks, especially in the hill region. April-May.

**A. opulifolium** Vill. = **A. Opalus** Mill. A taller tree, with smooth bark. Leaves usually of 5 obtuse lobes, crenate, 2 lowest very small. Wings of fruit slightly divergent. Flowers green, on drooping pedicels.

Mountain woods, rather scarce. March-May. Sainte Baume, etc.

**A. monspessulanum** L. Tree or shrub attaining 5 or 6 metres, with rugged bark and 3-lobed leaves, the lobes being equal and entire. Samara small. Dry hill-sides and stony woods in the Var. March-April.

#### CELASTRACEÆ.

##### EUONYMUS L.

**E. vulgaris** Scop. Spindle-tree. Shrub 2-3 yds. high. Leaves glabrous, ovate-lanceolate, serrate. Flowers greenish-white, 2-5 in a cyme. Capsule with 4 (rarely 5) rounded angles, not winged; deep pink, with orange arillus surrounding the seeds.

Hedges and borders of fields. April-June.

**E. latifolius** Scop. Broad-leaved Spindle tree. A similar shrub with rather larger and broader leaves and pale purple flowers, 5-10 in a long peduncled cyme. Capsule compressed, winged.

Mountain woods and rocks ascending to 4000 ft. or more. Local. May-June.

#### ILICINEÆ OR AQUIFOLIACEÆ.

##### ILEX L.

**I. Aquifolium** L. Holly. This well-known shrub or small tree is locally common in the mountain woods and valleys of the Var and Alpes-Marit. and usually flowers from April to June according to situation.

## RHAMNACEÆ.

- Petals 5, rolled in; fruit dilated at the top into a disc .....PALIURUS.  
 Petals 4-5, or 0, flat; fruit not winged .....RHAMNUS.

**PALIURUS** *Benth. and Hooker.*

**P. australis** *Gaertn.* Shrub 2-3 m. high, glabrous, spiny, with zigzag branches. Leaves alternate, shortly petioled, ovate-acuminate. Stipules spiny. Flowers small, yellow, in axillary cymes. Calyx wheel-shaped. Fruit orbicular, disc-shaped, broadly winged.

Woods, hedges, and road-sides. May-September.

**RHAMNUS** *L. BUCKTHORN.*

**R. Alaternus** *L.* Shrub 2-3 yds. high. Leaves persistent, oval or lanceolate, rather leathery, glabrous, alternate, loosely toothed at the membranous border. Flowers very small, yellowish-green, diœcious. Calyx of 5 lanceolate sepals. Petals 0. Very polymorphic.

Woods and slopes, common in the littoral region. February-April.

**R. cathartica** *L.* Shrub of 2-3 yds. Leaves deciduous, ovate, acutely serrate. Branchlets spinous. Flowers 4-merous, diœcious. Drupe globose, black when ripe.

Woods and hedges in the lower mountains. April-June.

**R. saxatilis** *L.* A smaller shrub, very much branched and spinous, branchlets greyish, opposite. Leaves smaller, stipules as long as the petiole and not much shorter. Calyx of 4 lanceolate lobes.

Rocks and dry places in the mountains. April-July.

**R. alpina** *L.* Shrub of 1-3 yds., erect. Branchlets alternate, not spiny. Leaves large, deciduous, oval or suborbicular, serrate. Calyx of 4 triangular lobes. Flowers diœcious, few.

Rocks and woods in the mountains, May-June, but not reaching as high as

**R. pumila** (which is not found in the Var but only in the Maritime Alps).

**R. Frangula** *L.* Black Dogwood. Shrub 1-4 yds. high, erect, not spiny. Leaves obovate, quite entire, nerves parallel. Flowers 5-merous, bisexual. Drupe globose, black when ripe.

Woods and hedges in the hill district. Rare. April-July.

## FRAXINACEÆ.

**FRAXINUS** *L.* (often placed in OLEACEÆ).

**F. excelsior** *L.* Ash. A tall deciduous tree. Leaflets oblong-lanceolate, serrate, 4-7 pairs. Perianth 0. Flowers small, polygamous, in dense axillary panicles. Stamens purple. Samaras  $1\frac{1}{2}$  in. in large drooping panicles, pedicelled, linear-oblong, notched at tip. Very polymorphic.

Woods and borders of streams. March-May.

**F. Ornus** *L.* Tree of 7-8 yds. Leaflets oblong-lanceolate, 2-4 pairs, serrate, greyish beneath, slightly pubescent above. Flowers whitish. Calyx and corolla of 4 divisions. Anthers on long filaments.

Hedges and borders of streams in Alpes-Marit. April-May.

## TEREBINTHACEÆ or ANACARDIACEÆ.

- Flowers diœcious; petals 0; stamens 5 .....PISTACIA.  
 Flowers hermaphrodite; petals 5; stamens 5 .....RHUS.

**PISTACIA** *L.*

**P. Lentiscus** *L.* Lentiscus (Plate IX). Shrub 1-3 yds. high, rarely a small tree of 5 or 6 yds., with a strong resinous smell. Leaves persistent, paripinnate, with winged petiole. Leaflets elliptic, obtuse, in 2-5 pairs. Flowers in dense short simple spikes, hermaphrodite, very small greenish-red, and some-







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PLATE X.

1. *Spartium junceum*.  
3. *Calycotome spinosa*.

2. *Genista argentea*.  
4. *Cytisus triflorus*.

times a rich dull carmine. Fruit small, globose, apiculate, red, then black when ripe. This plant (*Lentisc* in Eng.) yields the resin known as "mastic".

Very common in dry places and rocky woods in the littoral. April-May.

**P. Terebinthus L.** *Térébinthe*. Shrub of 2-5 yds. with a strong resinous smell. Leaves imparipinnate, deciduous. Leaflets 5-11, lanceolate, large, slightly leathery. Shining above, dull and pale below. Petiole not winged. Flowers in compound spikes. Fruit small, subglobose, red then brown.

Limestone hill-sides and rocks; much less common than the *Lentisc*, and rarely descending to the coast. April.

**Schinus molle**, the Californian Pepper-tree, so often planted for ornament, belongs to this family.

**RHUS L.**

**R. Cotinus L.** Shrub of 1-3 yds., very glabrous, smelling of turpentine. Leaves simple, oboval, glaucous and dull on both sides, petioled. Flowers yellowish, in terminal, compound panicles becoming feathery at maturity.

Woods, hill-sides, and arid slopes in the lower mountains. May-June.

**R. Coriaria L.** *Sumac*. Shrub of 1-3 yds., downy above, juice milky. Leaves imparipinnate; leaflets 7-15, ovate-lanceolate, serrate, thick, velvety. Flowers whitish, in compact, long, erect spikes. Drupe subglobose compressed, very hairy, purple brown at maturity, not plumose.

Dry, stony slopes and railway banks. June-August.

**SIMARUBACEÆ.**

**CNEORUM L.** (sometimes place in ANACARDIACEÆ).

**C. tricoccum L.** (Plate IX). A small shrub 2-4 ft. high, erect, glabrous. Leaves leathery, shining, persistent, entire, oblong, sessile, 1 nerved. Flowers hermaphrodite, deep yellow, 1-3 in the axils of the upper leaves. Petals 3-4, much shorter than the calyx. Stamens 3-4. Style 1, short with 3-4 stigmas. Fruit a dry drupe, greenish-black when ripe, divided into 3. This is the only representative in Europe of a family ordinarily tropical or sub-tropical. Prof. Penzig says it is perhaps a relic of the Tertiary flora of Europe, when the climatical conditions were different from those to-day, represented by types of plants now confined to hotter regions.

Dry rocky places in the littoral, here and there in les Alpes-Maritimes, west of the R. Roja, as near Menton, Monaco, Nice, and Antibes. April-June.

Sub-division III. CALYCIFLORÆ.

**LEGUMINOSÆ.**

**A. ANOMALÆ.** *Stamens free, not united by the filaments.*

- Stamens 10, free. Flowers red .....CERCIS.
- Stamens 10, free. Flowers yellow .....ANAGYRIS.
- Stamens 5, free. Corolla 0 .....CERATONIA.

**B. Stamens more or less united into a tube by the filaments.**

Series 1. *Leaves 1 or 3 foliolate, without tendrils.*

Tribe I. GENISTEÆ. Shrubs. Leaves 0, 1 or 3-foliolate. Leaflets entire.

Filaments all united. Pods 2 valved. (See *Lupinus*.)

- Calyx 1 lipped, like a spathe .....SPARTIUM.
- Calyx tubular, with 5 short teeth; plants spiny .....CALYCOTOME.
- Calyx shortly 2 lipped, lips deeply toothed .....GENISTA.
- Calyx shortly 2 lipped, lips minutely toothed .....CYTISUS.
- Calyx 2 lipped, the upper lip with 2 deep lobes .....ADENOCARPUS.
- Calyx deeply 2 lipped, coloured. Leaves spiny .....ULEX.
- Calyx scarious, very short; 2 spreading lips. Style long .....SAROTHAMNUS.
- Calyx deeply 2 lipped. Pod large, leaves digitate (more than 3 leaflets), mostly annual, herbaceous plants .....LUPINUS.

- Tribe II. TRIFOLIEÆ. Herbs; rarely shrubs. Leaves pinnately or rarely digitately 3 foliolate. Upper filament usually separate.  
 Filaments all united; calyx deeply 5-fid ..... ONONIS.  
 Racemes short. Pod longer than calyx, curved, dehiscent ..... TRIGONELLA.  
 Racemes short. Pods usually spiral ..... MEDICAGO.  
 Racemes long. Pod short, indehiscent. Keel petals free ..... MELILOTUS.  
 Flowers capitate. Pod short, 1-4 seeded. Keel petals adnate ..... TRIFOLIUM.

Series 2. *Leaves 5 or multi-foliolate, with a terminal leaflet.*

- Tribe III. LOTEÆ. Herbs or shrubs. Upper filament separate or not.  
 Pod 2 valved, without a longitudinal septum. Foliaceous stipules counted as leaflets.  
 Calyx inflated, covering the pod ..... ANTHYLLIS.  
 Calyx deeply 5-fid; pod flat, kidney-shaped, indehiscent ..... HYMENOCARPUS.  
 Calyx not inflated, pod exserted, dehiscent ..... LOTUS.  
 Pod with 4 membranous wings ..... TETRAGONOLOBUS.  
 Keel curved. Leaflets linear or linear oblong ..... DORYCNium.  
 Keel straight, obtuse. Leaflets oblong or wedge shaped ..... BONJEANIA.  
 Leaflets in 2-4 pairs. Flowers rose, very small, in globular heads ..... DORYCNOPSIS.

- Tribe IV. GALEGEÆ. Herbs or shrubs. Upper filament separate. Pod 2 valved, turgid or flat, with longitudinal septum.  
 Calyx campanulate 5-fid. Pod ovoid, 1 seeded, sessile, indehiscent. Leaves ternate ..... PSORALEA.  
 Keel obtuse. Pod rarely inflated ..... ASTRAGALUS.  
 Keel beaked or with incurved tip. Pod slightly inflated ..... OXYTROPIS.  
 Pod 1 celled, inflated, stem woody ..... COLUTEA.  
 Pod linear compressed, indented on both sides ..... BISERRULA.

- Tribe V. HEDYSAREÆ. Herbs or shrubs. Upper filament separate. Pod indehiscent, of 1 or many 1-seeded joints.  
 Pod cylindric; curved, many jointed. Keel obtuse ..... ORNITHOPUS.  
 Pod flat, of many curved 1 seeded joints. Keel very pointed ..... HIPPOCREPIS.  
 Pod cylindric, 2 or more jointed, often straight, glabrous ..... CORONILLA.  
 Pod spiral, 8 sided, covered with spines ..... SCORPIURUS.  
 Pod flat, short, hard, 1 seeded ..... ONOBRYCHIS.  
 Pod cylindric, of 2-5 oval joints ..... HEDYSARUM.  
 Pod linear, compressed, with long curved beak ..... BONAVERIA.

Series 3. *Leaves abruptly pinnate (or leaflets 0); petiole ending in a tendril or point.*

- Tribe VI. VICIEÆ. Herbs. Leaves pinnate; petiole ending in a tendril or point. Leaflets often toothed. Upper filament separate. Pod 2 valved.  
 Style bent at the base, curved. Stipules larger than the leaflets ..... PISUM.  
 Style flattened, hairy on upper margin only. Stipules not foliaceous ..... LATHYRUS.  
 Style filiform, hairy below or all round. Stipules not foliaceous ..... VICIA.  
 Style filiform, glabrous. Leaflets serrated. Pod ovoid, apiculate ..... CICER.

### CERCIS L.

**C. Siliquastrum L.** Judas Tree. A small tree, 4-6 yds. high. Leaves simple, cordate-orbicular, deciduous, glabrous. Flowers deep rose or magenta, on short pedicels, in dense clusters, opening before the leaves. Pods pendent, compressed, glabrous, 3-4 in. long.

Cultivated and subsontaneous here and there. March-May. A beautiful grove of these trees can be seen above the village of Gémenos towards la Sainte-Baume (Bouches du Rhône).

### CERATONIA L.

**C. Siliqua L.** Carob Tree (Plate IX). A tree, 6-10 yds. high. Leaves persistent imparipinnate, of 3-5 pairs of oval leaflets, entire, leathery, shining



above. Flowers greenish, very small in axillary subsessile spikes and consisting of 5 stamens spreading, and a sessile stigma. Calyx reddish. Pod pendent, very large, 12-20 cms. (5-8 in.) long, thick, leathery, pulpy.

Rocky slopes on the littoral, probably introduced from the East and naturalized. September-November.

### ANAGYRIS L.

**A. fœtida L.** A shrub 1-3 yds. high, with pubescent young branches. Leaves deciduous, trifoliolate, petioled; leaflets sessile, entire, elliptic, glabrous above. Flowers yellowish, stained with black, in short leafy many-flowered clusters. Standard short. Pod pendent, glabrous, yellowish, inflated at one end.

Dry, stony limestone slopes, rare. January-March. Below Fort Ste. Marguerite, Mont Coudon, Touris, Ollioules in the Var, and Nice Château.

### SPARTIUM L.

**S. junceum L.** Spanish Broom (Plate X). A glabrous bush 1-3 yds. high, erect, not spiny. Branches cylindric, junciform, very glabrous and glaucous. Leaves few, small, entire, oblong-lanceolate, glabrous above. Flowers large, yellow, sweet scented, in stiff terminal spikes. Pod linear, 6-8 cms. long, almost black when ripe.

Slopes and dry woods, very common. May-July. In the mountainous part of the Var it is often replaced by *Genista cinerea* at about 700 or 800 m.

### CALYCOTOME Lk.

**C. spinosa Lk.** (Plate X). A very spiny shrub 1-2 yds. high. Leaves trifoliolate, turning black on drying; leaflets subsessile oval, obtuse, glabrous above. Flowers solitary or in clusters of 2-4, bright yellow. Pedicels 2 or 3 times as long as calyx. Pods 30-40 mm. by 6-8, glabrous, shining and black when ripe, upper suture slightly winged. Very rarely the flowers are quite pale yellow.

Common on dry hill-sides and woods except in the mountain region. April-May. Like *Spartium* it forms an important feature in the *maquis*.

### SAROTHAMNUS Wimmer.

**S. scoparius Koch.** Broom. Bush 1-2 yds. high, erect, downy; branches green, angular, furrowed; branchlets and obovate leaflets silky. Leaves shortly petioled, lower ones trifoliolate, upper ones very small, simple and sessile. Flowers bright yellow, large, on short pedicels in terminal spikes. Pods  $1\frac{1}{2}$ -2 in. long; valves twisted after opening.

Very rare in the south. April-June. Here and there in the mountain region as at Gourdon, St. Vallier, Mont de la Chens, Forêt du Dom. Also at Langoustier in the Isle of Porquerolles.

### GENISTA L.

\* *Shrubs or under-shrubs, spiny. Flowers yellow.*

**G. germanica L.** Under-shrub 1-2 ft. high, much branched. Branches leafy, hairy. Spines simple or branching at base. Leaves simple, ovate or lanceolate, ciliate. Flowers yellow, in long terminal racemes. Standard pubescent, much shorter than keel.

Woody hills from near the sea to the mountains of Alpes-Marit. May-June.

**G. hispanica L.** Under shrub, 6-12 in., very spiny. Stems hairy in upper parts. Spines delicate, branching, brown at the tips. Leaves simple, lanceolate, acute, covered with long white hairs. Teeth of calyx very unequal, hairy. Flowers in short terminal heads. Standard smooth, about length of keel. Pods small, almost glabrous.

Dry hills and pine-woods, among heather, etc., local. April-July.

**G. Lobelii DC.** is a very spiny much-branched shrubby species which forms small thick cushions or tufts almost strong enough to support a man.

It grows on arid limestone slopes and hills at Sainte-Baume, Mont Faron, and Morière near Solliès-Toucas. May-July.

**\*\* Shrubs or under-shrubs, not spiny. Flowers yellow.**

**G. sagittalis L.** Winged Genista. Stems herbaceous, rampant, without thorns, but with 2-4 leafy wings. Leaves simple, oval or lanceolate. Calyx covered with silky hairs. Flowers in dense terminal racemes. Standard glabrous.

Dry hills and woods in the mountain region. May-June.

**G. tinctoria L.** Dyer's Green-weed. Stems 1-2 ft. branched, rigid, striate. Leaflets oblong or lanceolate, nearly glabrous, ciliate. Stipules minute, subulate. Flowers in slender racemes; keel and pod glabrous. Calyx deciduous above the base, teeth acuminate.

Meadows, damp sandy places on the littoral. April-July.

**G. pilosa L.** A wiry under-shrub 1-2½ ft. high. Stems rampant, tortuous. Leaves simple, elliptic-oblong, silky beneath, with 2 small stipules. Flowers rather dull yellow, solitary or in pairs, in long leafy racemes. Calyx hairy, teeth equal. Standard silky, rather longer than keel. Pods pubescent, flat.

Woods and dry hills. March-June. In the Var the commoner form is called **G. Jordani Shuttleworth.**

**G. cinerea DC.** A very branched stiff under-shrub, 2-3 ft. high, greyish-green. Leaves simple, lanceolate, small, silky beneath, no stipules. Flowers solitary or in pairs, in long loose spikes. Calyx hairy, teeth unequal, longer than the tube. Standard hairy, as long as the keel. Pods small 15-18 mm. long, silky with 2-5 shiny seeds.

Dry, limestone hills and woods in the mountain region. May-June.

**G. candicans L.** Shrub 1-2 yds. high, much branched, erect, very leafy. Leaves trifoliate, petioled; leaflets oboval-obtuse, mucronulate. Stipules small, falling. Flowers in little terminal corymbs. Pedicels bracteolate, short. Calyx hairy, teeth almost equal. Corolla glabrous. Standard erect, scarcely longer than keel. Pod rather long, hairy, almost straight.

Woods and hill-sides. April-June.

**G. linifolia L.** Shrub 2-5 ft. high, much branched, erect, hairy, very leafy. Leaves trifoliate, sessile; leaflets linear, rolled in at margin, leathery, silky beneath and sometimes quite silvery. Flowers in dense terminal heads; pedicels longer than tube of calyx. Calyx silky, teeth almost equal. Standard hairy, longer than keel. Pod linear-oblong, hairy, 15-20 mm. long.

Woods and ravines in the neighbourhood of Hyères and Toulon, rare, as on Fenouillet, la Colle-Noire, and Isles of Porquerolles and Port Cros. April-June. Not known elsewhere in France.

**G. argentea Noulet = Cytisus argenteus L. = Argyrolobium Linnaeanum Walp.** (Plate X). Under-shrub 8-12 in. high, stems branching, silvery white above. Leaves trifoliate, silky; leaflets elliptical or lanceolate, green above, white beneath. Flowers yellow, with orange markings, solitary, terminal or in racemes of 2-4, without bracteoles. Pods linear, silky.

Dry banks and rocky places, especially on limestone. April-May.

#### CYTISUS L.

**\* Flowers in racemes, not leafy; calyx short, campanulate.**

**C. alpinus Mill. = Laburnum alpinum Laug.** A small glabrous tree, 6-20 ft. high. Leaves trifoliate, on long stalks; leaflets large, entire, pointed, shortly stalked, green on both sides, sometimes hairy at margin. Flowers yellow in a large, pendent, downy raceme. Pod glabrous, shining, with winged keel to upper suture.

Mountain woods and bushy places in Maritime Alps and Forêt de Margès. July-August.

**C. sessilifolius L.** An erect branching shrub, 3-6 ft. high. Leaves trifoliate, lower ones and those of the sterile branches petiolate; leaflets oval or rhomboidal. Flowers yellow, in terminal racemes, with 3 small bracts below the calyx. Upper lip of calyx entire, truncate. Pod long, linear, glabrous.



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PLATE XI.

1. *Anthyllis tetraphylla*. 2. *Tetragonolobus siliquosus*. 3. *Medicago scutellata*.  
4. *Medicago marina*. 5. *Trifolium angustifolium*.





Woods and limestone slopes from near the sea to the mountains. April-June.

*\*\* Flowers solitary or in pairs in leafy heads or clusters.*

**C. triflorus** *L'Hérit.* (Plate X). Shrub erect, much branched, 3-8 ft. high. Leaves trifoliate, leaflets hairy, elliptical or obovate, mucronulate, middle one largest, often blotched with black—due probably to a fungus. Calyx short, upper lip divided. Flowers yellow, axillary, nodding, usually in clusters of three, sometimes solitary, opening one at a time. Keel acute, beaked. Pod long and hairy, turning black, like the leaves, on drying.

Woods and hill-sides, very common on the littoral. February-May.

**C. hirsutus** *L.* An under-shrub, 1-2½ ft. high with leafy branches covered with long soft hairs. Leaves trifoliate, with oblong or obovate leaflets. Calyx, tubular, longer than pedicels. Flowers large, axillary, in clusters of 2 or 3 on short stalks, pale yellow mingled with red, wings crinkled at edges. Pods 30 mm. long, very hairy.

Woods places in the Maritime Alps. May, June. Levens, Berre, rare above Menton. In the Alps and Ligurian mountains it has a more prostrate habit. Leaves turn black on drying.

**C. Ardoini** *Fournier.* Under-shrub 1-2 ft. high, rampant, hairy. Leaves trifoliate, petioled; leaflets small, linear oblong, silky grey. Calyx-tube short, with spreading teeth. Flowers yellow, rather small, 1-3 on short lateral branches, leafy at base. Standard glabrous, as long as the obtuse keel. Pod 20 mm. long, compressed, very hairy.

Rare in the Maritime Alps, as on Mont de l'Aiguille above Menton at about 1200 m. April-May.

#### ADENOCARPUS DC.

**A. grandiflorus** *Boiss.* Shrub 1-3 ft. high, branches pubescent, finally almost spiny. Leaves fascicled, shortly petioled; leaflets obovate, almost glabrous. Stipules small, lanceolate. Flowers large 12-14 mm. long, spreading, 1-4 in short terminal heads. Pedicels much shorter than calyx, which is hairy, with equal lips, the lower ones with equal teeth. Standard hairy. Pod 20-25 mm., very glandular.

Woods and dry slopes, especially on siliceous soil. Frequent in the Var. May-July.

#### ULEX L. GORSE.

**U. europæus** *L.* Common Gorse. A very spiny shrub. Bracts large, ovate, lax. Leaves small, leaflets hairy. Calyx hairs spreading, teeth minute, wings longer than the keel.

Dry places and woods. Rare in Provence, and perhaps only naturalized in a few places in the Var. March, April.

**U. parviflorus** *Pourr.* Small-flowered Gorse. A rather smaller plant, with almost glabrous branches and robust spines. Leaves short, those of the branches springing from the axils of the spines, simple, alternate. Flowers small, 7-8 mm. long, fascicled. Bracts as large as the pedicels. Wings shorter than the keel.

Woods and dry places in the Var. February-April. Ste. Marguerite, north side of Colle Noire near Carqueiranne, Le Pradet, etc.

#### LUPINUS L. LUPINE.

**L. hirsutus** *L.* Plant very hairy, a foot high. Leaves digitate, leaflets 5-7 obovate, mucronate. Flowers blue, large, lower ones alternate, upper ones irregularly whorled, in long spikes. Lower lip of calyx trifid, shorter than the upper bifid one. Pod broad (30-40 mm. by 10-12), very hairy. Seeds brown with fawn-coloured marks.

Sandy places, fields and thickets. April-May.

**L. angustifolius** *L.* A less hairy rather taller plant. Leaflets linear-oblong, flat, glabrous above, downy beneath. Flowers dark blue, alternate, in dense spikes. Lower lip of calyx almost entire. Keel sharply curved, with distinct beak. Pods 10-12 mm. broad. Seeds marbled with black and white.

Sandy fields. April-June.

**L. reticulatus** *Desv.* Leaflets narrow-linear, slightly channelled. Flowers paler blue. Upper lip of calyx trifid. Keel less beaked. Pods 6-9 mm. broad. Seeds smaller, spotted and reticulated with dark reddish colour. Perhaps a sub-species of the last.

Sandy fields. April-June.

**L. cryptanthus** *Shuttle.* is a variety with smaller flowers partly hidden by the leaves, corolla quickly falling, and with longer pods.

Near Bormes, Hyères, Roquebrune, etc., in the Var, rare. April-June.

**L. albus** *L.* = **L. Termis** *Forsk.* Leaflets obovate or oblong, obtuse, glabrous above, hairy beneath. Upper lip of calyx almost entire. Flowers white, blotched with blue at the top, in short terminal heads, not whorled.

Often cultivated for fodder. Naturalized at Cap Croisette near Cannes. May. All the above are annual.

### ONONIS *L.*

\* *Peduncles rather long, sometimes pedicel-jointed near the top.*

**O. rotundifolia** *L.* Round-leaved Rest-harrow. Plant 1-1½ ft. high, hairy-glandular, with woody root-stock. Leaves trifoliolate, long petioled; leaflets orbicular, toothed, the middle one large. Flowers large, rose, prettily veined, 2-3 on long peduncles. Pod large, inflated, hairy.

Rocky mountain woods. May-July. Rare. Ascends to the sub-Alpine region.

**O. fruticosa** *L.* Under-shrub 1-3 ft. high, erect, not spiny; young branches hairy, glandular. Leaves trifoliolate, sessile; leaflets oblong, sessile, strongly serrate, glabrous and rather leathery. Flowers large, rose-purple, 2-3 on longish peduncles. Pod about 20 mm. long, hairy glandular.

Mountain woods and rocky places. June-August. Rather rare.

**O. Natrix** *L.* A stout viscus species with large yellow flowers streaked with red. Leaves of stem trifoliolate, petioled; leaflets oblong, toothed. Upper leaves simple. Stipules ovate-lanceolate, shorter than petiole. Peduncles 1 flowered. Calyx-lobes 3 times as long as tube. Pod 15-20 mm. long, hairy.

Sandy places and limestone hill-sides. June-July. In the Var it is found in the plain near Toulon and Hyères, in Alpes-Maritimes in the mountain region.

**O. viscosa** *L.* Annual, a foot high, covered with long glandular hairs. Leaves petioled, mostly simple; leaflets ovate, serrate. Flowers yellow, rather small, axillary. Peduncles filiform, jointed, longer than the leaves, with prolonged awn longer than pedicel. Calyx-lobes linear, 3-4 times length of tube. Pod oblong-cylindric, hairy.

Waste ground and hillocks. May-June.

The sub-species **O. breviflora** *DC.* is also frequent on the littoral. It is hardly viscus and the sepals are like bristles. **O. pubescens** *L.* and **O. striata** *Gouan* occur in the Var, and **O. cenisia** *L.* rarely in the mountains. **O. ramosissima** *Desf.* is a branched yellow-flowered plant.

**O. reclinata** *L.* Annual, 6-10 in., covered with long glandular hairs. Leaves trifoliolate, with small obovate-cuneate leaflets, strongly nerved, serrated. Flowers small, axillary, on short, erect pedicels, as long as the calyx. Standard pink, wings and keel often white.

Sandy fields. April-June.

\*\* *Peduncles very short, not jointed.*

**O. spinosa** *L.* Common Rest-harrow. Suffruticose, hirsute, usually spiny. Leaves often 1-foliolate. Flowers sessile or shortly pedicelled, solitary or in



leafy racemes, pink, rather large. Pod obliquely ovate or oblong, 1-4 seeded. A foetid and very variable species.

Fields and waste places. April-August.

**O. repens** *L.* Creeping Rest-harrow. A sub-species of the last, viscidly glandular, prostrate or ascending, stoloniferous, rarely spinous. Leaflets ovate or obovate. Flowers larger, pink. Pod usually shorter than calyx. Very variable. Sandy fields and waste places. May-July.

**O. Columnæ** *All.* Plant hairy-glandular, 6-10 in. high, erect, with woody root-stock. Leaves trifoliolate on longish stalks, central leaflet petioled. Flowers yellow, in leafy spikes. Stipules oval-lanceolate, shorter than the petiole. Calyx-lobes linear-lanceolate, about as long as the hairy pod.

Limestone hills above Menton, St. Martin Lantosque, etc. Rather rare.

**O. minutissima** *L.* Almost glabrous, 6-18 in. high, ligneous at base. Leaves trifoliolate; leaflets small, sessile, cuneate, serrate. Stipules subulate, entire. Flowers yellow, small, in dense leafy spikes. Calyx lobes, linear-subulate, 3 times as long as tube and as long as the corolla. Pods glabrous, ovoid, blackish. Dry, stony places on the littoral, common. May-October.

**O. mitissima** *L.* Annual, 1-2 ft. high, nearly glabrous. Stem-leaves trifoliolate, short-petioled. Leaflets oblong, serrate. Floral leaves simple or none. Stipules scarious, entire, in form of a 2-lobed sheath. Flowers pink, small, almost hidden in a dense spike. Calyx tubular, with lobes equalling the tube. Pod ovoid, hairy, equal in length to calyx.

Fields and hills on the littoral, rare. Iles d'Hyères, Six Fours, Ile Ste. Marguerite.

### TRIGONELLA *L.*

**T. gladiata** *Steud.* A small annual. Leaves trifoliolate; leaflets obovate, cuneate, serrate at top. Stipules entire. Flowers whitish, small, solitary or in pairs, axillary, sessile. Pod large, erect, linear-lanceolate, curved, with very long beak projecting like a sword.

Stony fields and dry hills, uncommon. April-June.

**T. monspeliaca** *L.* A small pubescent annual, 6-12 in. high. Leaves trifoliolate with obovate leaflets, serrate at top. Stipules toothed. Flowers yellow, very small, 5-12 in axillary, sessile whorls throughout the length of the stem. Pods spreading like stars, linear, curved, mucronate, the concave side upwards.

Barren stony ground in the plains and hills. April-June.

### MELILOTUS *L.*

**M. arvensis** *L.* Field Melilot. Biennial, glabrescent, erect, reaching 3 ft. in height. Leaves trifoliolate. Leaflets oblong, or ovate, serrate at top. Flowers small, yellow, scented, in long axillary racemes, drooping. Wings and standard longer than keel. Pod ovoid, obtuse, mucronate, rugose, glabrous.

In crops and waste places. May-July.

**M. altissima** *Thuill.* Tall Melilot. Erect, almost glabrous, 2-4 ft. high. Leaflets narrow linear-oblong, serrate. Stipules subulate, slender. Racemes 3-4 in. long. Corolla scented, more than twice length of calyx; petals nearly equal. Pod ovoid, compressed, acuminate, reticulate, hairy, black when ripe.

Meadows and sides of streams. May-September.

**M. alba** *Desv.* White Melilot. Biennial, almost glabrous, more slender than the last. Flowers smaller, white. Pods more ovoid and glabrous, but also black when ripe. Standard longer than wings or keel.

Sides of water-courses. May-August.

**M. messanensis** *All.* Annual, nearly glabrous, very leafy. Leaflets obovate-cuneate, serrate at top. Flowers yellow, in short racemes much shorter than the leaves. Pods large, 7-9 mm. long, channelled on upper side, elliptic

acute, glabrous, yellow when ripe. Sides covered with numerous concentric ridges. Standard as long as keel and slightly longer than wings.

Damp, sandy fields near the sea, rare. March-June. Mourillon near Toulon, and meadows between Hyères and the sea.

**M. sulcata** Desf. Annual, nearly glabrous. Leaflets oblong, acute, serrate. Stipules incised-dentate. Flowers yellow, very small, in dense spikes. Calyx-teeth equal. Standard shorter than keel and much shorter than wings. Pod glabrous, green, globular, compressed, obtuse, upper edge keeled, with numerous concentric ridges.

Stony, sandy places in the littoral. April-June.

**M. indica** All. with very narrow leaflets, **M. neapolitana** Ten., **M. italica** Lamk. with very large leaves, and **M. elegans** Salz. also occur.

### MEDICAGO L.

*All flowers yellow except in the first species.*

\* *Pods without spines.*

**M. sativa** L. Lucern. Stem erect, branched, 1-2 ft. Leaflets narrowly obovate-oblong, toothed, tip notched and apiculate. Flowers in a short dense raceme, purple; peduncles longer than leaves, pedicels very short. Stipules almost entire. Pod with 2-3 coils, downy.

Fields and road-sides, cultivated and often naturalized. May-August.

**M. falcata** Fries. Sickle Medick. Stem erect, 1-2 ft. Flowers rather large, numerous, bright yellow. Peduncles longer than the leaves. Stipules entire or toothed. Pod sickle-shaped, downy.

Road-sides and fields, common. May-August.

**M. media** Pers. is a variety with dingy flowers, at first yellowish and then more purple or whitish, and ring-shaped pods.

It grows in dry, sunny places in the mountain region, but is rare in the south.

**M. Lupulina** L. Black Medick. Biennial, procumbent or ascending. Leaflets obovate, toothed, apiculate; petiole very short; stipules half-cordate. Flowers yellow, very small, numerous, in ovoid heads. Pod small, curved, reticulate, reniform, black when ripe.

Fields and waste grassy places, common. March-July.

**M. orbicularis** All. Annual, 1-2 ft., rampant, almost glabrous. Leaflets obovate-cuneate, toothed at top. Stipules laciniate. Flowers small, yellow, 1-3 on peduncles shorter than the leaves. Pods very large, disk-shaped, usually glabrous, with 3-5 coils, nearly black when ripe.

Fields and grassy places, fairly common. April-July.

**M. scutellata** All. (Plate XI). Annual, 1-2 ft., rampant, hairy-glandular. Flowers 1-3, orange-yellow, longer than the last, on peduncles shorter than the leaves. Stipules toothed. Pods large, hemispherical, of 5-6 coils, hairy, yellow.

Stony fields and dry places. April-June.

\*\* *Pods spiny, in a loose spiral.*

**M. præcox** DC. A small annual, slightly downy. Leaflets small, obovate-cuneate. Stipules laciniate. Flowers 1-2, very small, yellow, on peduncles, much shorter than the leaves. Pods glabrescent, rather small, not turning black, discoid, of 2-3 spiny coils; spines divaricate, hooked.

Dry, stony places. March-May.

**M. maculata** Willd. = **M. arabica** All. Spotted Medick. Annual, nearly glabrous. Leaflets obovate or cuneate, slightly emarginate and toothed at top, usually spotted with dark purple in the middle. Flowers small, yellow. Stipules toothed. Pods subglobose, faintly reticulate, with 3-5 coils and a double row of long curved spines.

Waste places and road-sides, common. April-June.

**M. minima** Lamk. A small downy annual. Leaflets obovate, variable, stipules half-cordate, faintly toothed. Flowers very small, bright yellow. Pods subglobose, faintly reticulate,  $\frac{1}{2}$  in. diameter, margin keeled, with 4 or 5 coils and a double row of close-set hooked spines.

Sandy fields and dry places, rather rare in the south. March-June.

**M. Tenoreana** DC. Annual, rather hairy. Leaflets obovate-cuneate. Flowers small, 1-3 on peduncles shorter than the leaves. Pedicels shorter than calyx-tube. Pod glabrous, rather large, with 4 or 5 loose equal coils and a double row of long spines.

Fields and dry places. April-May. Commoner than the last.

\*\*\* Pods spiny, in a tight spiral.

**M. marina** L. Sea Medicago (Plate XI). Plant quite whitish-tomentose, with woody root-stock, rampant. Leaflets oboval, cuneate, apiculate. Flowers yellow, rather large, 5-10 in tight short clusters. Pod tomentose, cottony, discoid, with 2 or 3 tight coils and a few distant spines.

Maritime sands, common. April-June.

**M. littoralis** Rhode. Annual or biennial. Leaflets obovate-cuneate, emarginate. Stipules toothed, with fine segments. Yellow flowers rather small, 2-4 on peduncles longer than the leaves. Pod glabrous, small, sub-cylindric, of 3-5 coils, reticulate, flat at each end, spines distant and sometimes almost wanting.

Maritime sands and banks, common. May-June.

**M. tuberculata** Willd. A stout annual, rather hairy. Leaflets oblong or obovate, large. Flowers small, 2-8 on peduncles as long as the leaves. Pod glabrous, flat at base, rounded at top, of 4 or 5 tight coils, covered with tubercles or very short broad spines.

Fields and road-sides, rare. April-June. Near Hyères, Nice, etc.

**M. sphærocarpa** Bert. = **M. Murex** Willd. Annual, feebly pubescent. Leaflets obovate-cuneate. Small yellow flowers, 1-4 on short peduncles. Pod glabrous, globose or ovoid, rounded at each end, of 5-7 tight coils, 3-nerved and with short conical spines.

Borders of fields and grassy places, local. April-June.

**M. Gerardi** Willd. = **M. rigidula** Desr. Annual or biennial, hairy. Leaflets obovate, cuneate, slightly emarginate. Flowers 1-2, rarely 3-4, on aristate peduncles. Pod hairy, sub-cylindrical, slightly rounded at each end, of 4-6 tight coils with spreading, hooked spines. A polymorphic species.

Borders of fields and hill-sides. April-July.

**M. tribuloides** Desr. Annual, hairy. Leaflets obovate-cuneate. Flowers rather small, 1-2 on aristate peduncles about equalling the leaf. Pod glabrous, sub-cylindrical, flat at both ends and with 3-5 tight equal coils and strong spreading spines, not hooked.

Borders of fields and waste places on the littoral. March-June.

Various other species of *Medicago* (e.g. **M. turbinata** Willd., **M. hispida** Gaertn., **M. coronata** Desr., **M. disciformis** DC.) are found on the Riviera, but, as Joseph Woods said in "The Tourist's Flora," 1850, "the points of comparison taken by different authors . . . are so various and expressed in such different terms it is impossible to reduce them satisfactorily to an analytical form." Moreover, they are plants of little importance or beauty excepting the spiral fruits.

### TRIFOLIUM L.

1. Flowers red, pink, white or yellowish-white.

\* Heads terminal, calyx hairy or with very unequal ciliate teeth.

**T. pratense** L. Common Purple Clover. Upper leaves opposite; leaflets oblong. Stipules membranous, free portion triangular, setaceous, appressed to the petiole. Calyx-tube hairy, 10-nerved; calyx-teeth slender, setaceous, erect the lowest longest. Flowers reddish-purple, in terminal globose sessile heads.

Fields, grassy places, and road-sides, common. March-August.



**T. medium** *L.* Zigzag Clover. Leaflets oblong-elliptical. Stipules with free portion linear-lanceolate, away from the petiole. Calyx-tube glabrous, or nearly so, 10-nerved; teeth ciliate, setaceous, unequal, the lowest twice as long as the tube. Flowers bright reddish-purple, very large, in large globose shortly peduncled heads. Stem often zigzag.

Mountain region of Alpes-Marit. May-July.

**T. alpestre** *L.* Resembling the last but stiffer in habit. Leaves shortly petioled; leaflets oblong-lanceolate, strongly nerved, finely toothed. Stipules narrow, upper portion linear, entire. Flowers purple-red, in a globular, terminal head, the head being sessile between the 2 upper leaves. Calyx hairy, with 20 nerves and with ciliate teeth, inferior tooth longer than the tube.

Mountain woods, pastures, and Chestnut groves, rarely below 700 m. June-July.

**T. rubens** *L.* Leaflets oblong-lanceolate, glabrous, leathery, strongly nerved. Stipules very large, with upper portions lanceolate-acute. Calyx-tube almost glabrous, with 20 nerves; teeth ciliate, setaceous, very unequal. Flowers purple-red, very numerous, in long oblong erect heads.

Wood clearings in the mountains and limestone hill-sides, local. May-July.

**T. ochroleucum** *Huds.* Sulphur Clover. Leaflets obovate or oblong, tip entire or notched, softly pubescent. Stipules lanceolate, adnate to the middle. Flowers pale yellow, turning brown when old, in globose terminal heads. Peduncles short. Calyx-teeth lanceolate-acuminate, very unequal, the lowest curved.

Mountain woods and uncultivated places. June-July.

\*\* Heads terminal, calyx hairy, with nearly equal ciliate teeth.

**T. angustifolium** *L.* (Plate XI). Narrow-leaved Clover. Annual. Leaves all alternate. Leaflets linear. Calyx-tube narrow, 10-nerved. Flowers rose coloured, rather small, in oblong-conical heads which are shortly peduncled, terminal and solitary. Calyx-tube hairy; teeth ciliate, linear, subulate.

Dry, sandy places, common. May-July.

**T. stellatum** *L.* Starry Clover. Annual, covered with soft spreading hairs. Leaves alternate, leaflets obovate. Calyx 10-nerved, teeth lanceolate, acute, longer than the tube. After flowering, the calyx is spread open like a star, and, especially on very dry ground, becomes dark crimson in the centre with white eye—a beautiful object. Flowers pinkish-white, in round heads.

Dry places, common. April-June.

**T. Cherleri** *L.* Annual, hairy. Upper leaves opposite. Leaflets small, obovate-cuneate. Stipules ovate, acute. Calyx 20-nerved; teeth long, equal, covered with soft spreading hairs and expanding after flowering. Flower-heads globose, with 3 very broad and enlarged stipules at base. Flowers whitish.

Dry and sandy places, in the Olive region. May-June.

**T. lappaceum** *L.* Annual, rather hairy and slender. Upper leaves opposite. Leaflets obovate; free portion of stipules short, lanceolate-acuminate. Flowers pinkish-white, in dense spherical heads. Tube of calyx campanulate, 20-nerved, glabrous outside, throat hairy, with long, ciliate, nearly equal, spreading teeth.

Fields and dry slopes. May-June.

**T. maritimum** *L.* Sea Clover. A stout annual, hairy. Upper leaves opposite. Stipules linear. Leaflets oblong. Flowers pinkish, in solitary, rather small spherical heads, peduncled or rarely sessile. Calyx-tube campanulate, 10-nerved at base, throat closed by 2 glabrous lips; teeth 3-nerved, lanceolate, stiff spreading, the longest equalling the tube, ciliate.

Maritime meadows and grassy places, very local. April-July.

**T. incarnatum** *L.* (Crimson Clover) is cultivated for forage, and the cream coloured var. **T. Molinerii** *Balb.*, is occasionally seen.

\*\*\* Heads terminal and axillary; calyx hairy or with ciliate teeth.

**T. arvense** L. Hare's-foot Trefoil. A slender annual or biennial covered with soft hairs. Leaflets linear-oblong. Stipules narrow, free portion linear setaceous. Flowers very small, numerous, pale pink, in silky oblong or cylindrical peduncled heads. Calyx very silky, teeth plumose, longer than corolla.

Sandy fields and dry places, common. May-July.

**T. ligusticum** Balb. Annual, green, slender. Leaflets obovate. Flowers rose, very small, in oblong cylindrical heads, often in pairs, one axillary and peduncled, the other terminal and sessile. Calyx-tube hairy, teeth setaceous, equal, twice length of tube.

Fields and waste sandy ground, rare. May, June.

**T. subterraneum** L. Subterranean Clover. Annual, softly hairy, prostrate. Leaflets obovate, sometimes reddish. Stipules ovate acute. Calyx-teeth setaceous, as long as tube. Fertile flowers 2-5, creamy-white, in loose peduncled heads elongated after flowering and turned down towards the earth.

Sandy fields and grassy places. March-July.

**T. resupinatum** L. Reversed-flowered Clover. Annual. Leaflets obovate. Free part of stipules lanceolate-acuminate. Upper lip of calyx with 2 divergent teeth. Calyx swollen in fruiting stage. Bracts under pedicels truncate, forming a small green involucre. Flowers rose, reversed, in small globose, peduncled heads.

Fields, road-sides, etc., not common. April-July.

**T. tomentosum** L. Annual, prostrate. Leaflets obovate-cuneate, nearly glabrous, the name being derived from the very tomentose calyx, whose 2 upper teeth are short and hidden in the wool. Flower-heads small, almost sessile, with bracts beneath forming an involucre. Flowers rose, very small.

Grassy places near the sea. April-May.

**T. Bocconi Savi.** Boccone's Clover. A small, stiff, erect rather downy annual. Leaflets obovate or oblong-cuneate. Calyx-teeth connivent, unequal, subulate, lower one as long as the tube. Flowers rose, small, in oblong sessile heads, the terminal ones usually in pairs.

Sandy places and dry fields, uncommon. May-July.

**T. fragiferum** L., **T. striatum**, and **T. scabrum** come in this group.

\*\*\*\* Heads terminal and axillary, calyx glabrous or nearly so.

**T. glomeratum** L. Clustered Clover. Annual. Uppermost leaves opposite, others alternate; leaflets toothed, broadly obovate. Stipules short. Calyx beautifully ridged with 10 nerves; teeth equal, broad, very pointed, and reflexed when ripe. Corolla pink, very small, but exceeding the calyx-teeth. Flower-heads sessile, axillary, globose.

Dry, waste places. May-June.

**T. montanum** L. Stems erect, a foot high, pubescent. Leaflets oblong, elliptic, glabrous above, strongly nerved, finely toothed all round. Flower-heads globular or oval, long peduncled; flowers white or cream-coloured, rarely rose. Calyx slightly hairy, with equal teeth.

Mountain pastures. June, July. It ascends to the lower Alpine region.

**T. nigrescens** Viv. Plant glabrous, bright green, annual. Leaflets obovate-cuneate. Flower-heads globose, lax, on peduncles longer than leaves. Stipules oval, abruptly acuminate. Flowers white or pinkish, on short pedicels, finally reflexed and becoming brown. Calyx whitish, with green veins, upper teeth contiguous.

Road-sides and pastures. April-June.

**T. suffocatum** L., **T. repens** L. (White Clover), and **T. elegans** Savi., come in this group; also **T. hybridum** L. (Alsike Clover), which was found by the writer with M. Jahandiez on a road-side in the Island of Porquerolles in May, 1913 (new to the Var).

## 2. Flowers bright yellow.

**T. patens** Schreber. Stem slender, flexible. Leaflets oblong-cuneate, with ovate acute stipules at base. Calyx-teeth unequal, inferior ones twice length of tube. Flower-heads on long slender peduncles, hemispherical and then globose. Corolla rich golden yellow, with striped standard and diverging wings. Terminal leaflet often petioled.

Moist fields and meadows, rare. April-July. Antibes, mouth of the Var, Ventimiglia, Bordighera, between Fontan and Tenda, near Fréjus, at Goudin, Bagnols, etc.

**T. aureum** Poll. Annual or biennial, pubescent, rather robust, leafy. Leaflets all sessile, oval-oblong. Stipules linear-lanceolate. Flowers numerous, bright yellow then pale brown, in axillary heads; peduncles thick, stiff. Calyx-teeth unequal, lower ones longer than the tube. Style as long as the pod.

Mountain pastures in Alpes-Marit. June-July.

**T. campestre** Schreber. = **T. agrarium** G.G. Annual, pubescent. Upper leaves alternate. Leaflets obovate-cuneate. Flowers golden yellow, reddish-brown later, numerous, in tight oval heads. Peduncles stiff, longer than the leaves. Style very short.

Fields and dry places. May-July.

**T. procumbens** L., Hop Clover., **T. minus** Rehl. (**T. dubium** Sibth.), and **T. filiforme** L. (Least Yellow Trefoil) also come under this group.

## ANTHYLLIS L.

**A. cytisoides** L. Under-shrub 1-3 ft. high. Stem leafy, white tomentose, stiff. Lower leaves and floral leaves simple, others trifoliate; leaflets oval-lanceolate, flat, thick, greyish. Flowers yellow, rather small, subsessile, in a long narrow spike. Calyx white tomentose, teeth almost equal.

Dry slopes and hills, very rare. May-June. Fort Ste. Marguerite (Var) and Ile Ste. Marguerite, off Cannes.

**A. barba-Jovis** L. Shrub, 2-3 ft. high, silky grey, very leafy. Leaves imparipinnate, petiole sheathing; leaflets linear-oblong, silky and silvery, especially beneath. Flowers pale yellow, in dense terminal axillary heads, peduncled. Calyx silky, with 5 nearly equal teeth. Pod oblong-acuminate glabrous.

Maritime rocks, very local. April-June, sometimes in March. A very striking plant of the Riviera and often cultivated in gardens.

**A. montana** L. Stems woody at base, 6-12 in. high. Leaves imparipinnate, with 10-15 pairs of oblong silky leaflets. Calyx-teeth equal to the tube. Flowers crimson or rose, in dense globular heads on a long naked peduncle, and with 2 leafy sessile palmatifid bracts below them.

Rocky places in the lower limestone mountains. May-July. It grows abundantly at considerably lower elevation in the Var and Maritime Alps than usually in the Alps of central Europe (4500-6500 ft.). Once above Tenda the writer came upon a mass of remarkably robust plants about 2 ft. high.

**A. Vulneraria** L. Lady's-fingers. Root-leaves with 1-4 leaflets; stem-leaves with 4-10 smaller ones, the terminal one very large. Calyx much swollen, with oblique mouth and short triangular teeth. Corolla golden yellow. Polymorphic.

Dry fields and hill-sides, rare except in the mountain region. April-June. Less common in the Var than the variety **Dillenii** = **A. Vulneraria** var. **rubriflora** Koch. = **A. Dillenii** Schultz, which has deep rose or crimson flowers and creamy-white calyx tipped with purple. It grows on many of the limestone hills such as Coudon, Faron, Paradis, etc. At Ste.-Baume the flowers are often nearly white (? var. **alpestris** Heg.).

**A. tetraphylla** L. (Plate XI). Annual, hairy, somewhat rampant or prostrate. Leaves imparipinnate, with 1-2 pairs of small leaflets and a very large terminal obovate mucronate one. Petioles dilated at base. Flowers



yellowish-white, striped with pink, in axillary clusters. Calyx pubescent, becoming inflated, and often marked with red; teeth 5, small, equal.

Dry fields and hills, local. April-June.

#### HYMENOCARPUS *Savi.*

**H. circinatus** *Savi.* An annual, 6-18 in., softly pubescent. Lower leaves simple, the others imparipinnate, sessile, with 2-4 pairs of entire, oblong-lanceolate unequal leaflets, the terminal being largest. Stipules none. Flowers 2-6, in umbels on axillary peduncles, yellow. Pod reniform, flat, with veined sides, broadly winged and spiny.

In crops and elsewhere, occasionally in Alpes-Marit. April, May. Villefranche, Île Ste. Marguerite near Cannes. Introduced by seed at Cap Brun near Toulon.

#### DORYCNOPSIS *Boiss.*

**D. Gerardi** *Boiss.* Plant glabrescent, straggling, 1-3 ft. high. Stems numerous, rather wiry, slender and with few leaves. Leaves imparipinnate, with 2-4 pairs of lanceolate leaflets, entire and almost equal. Flowers very small, bright rose, 15-20 in small hemispherical heads, axillary and terminal, long peduncled. Calyx pubescent, with small acuminate equal teeth. Pod small, ovoid, glabrous, indehiscent, 1 seeded.

Woods, railway banks, and hill-sides in the Var, local. May-July. Can be seen well by the railway between Pardigon and La Croix.

#### DORYCNIUM *Adans.*

**D. pentaphyllum** *Scop.* Sub-species **D. gracile** *Ford.* Plant about 2 ft. high, slender though bushy; stems almost herbaceous. Leaflets linear-lanceolate, sessile, pubescent. Flowers 10-15, very small, in heads on long peduncles and rather one-sided. Standard pinkish-white, keel bluish. Calyx teeth as long as tube. Pod ovoid or subglobular, mucronate, with slightly keeled sutures.

Damp places and grassy spots near the sea. May-July.

Sub-species **D. suffruticosum** *Vill.* Under-shrub 1-2 ft. high, much branched. Stems woody, with erect branches. Leaflets linear-lanceolate, shorter, silky. Flowers 5-12, not unilateral. Pedicels shorter than calyx-tube. Calyx-teeth shorter than tube. Standard white, violin shaped, keel marked with bluish-black at top. Pod ovoid or globular, obtuse with keeled sutures.

Dry woods and slopes, common. April-June.

#### BONJEANIA *Reichb.*

**B. hirsuta** *Reichb.* = **Lotus hirsutus** *L.* Shrubby plant, 1-2 ft. high, cottony. Leaflets oblong-lanceolate, with common petiole, shorter than the lanceolate stipules. Flowers large, 5-10 in. loose heads. Corolla twice as long as calyx; standard and wings white stained with pink, keel purple-black. Pods few, oblong, short, thick and mucronate.

Dry slopes, borders of fields, etc. May-June.

**B. recta** *Reichb.* = **Lotus rectus** *L.* (Plate XII). Plant erect, 2-3 ft. high, hairy above. Leaflets broadly cuneate, glaucous below, hairy, with common petiole nearly as long as the stipules. Stipules ovate-acute. Flowers numerous, small, pinkish-white with purple-black keel. Pods numerous, linear-cylindrical, mucronate.

Damp places, sides of streams, etc., on the littoral. May-July.

#### TETRAGONOLOBUS *Scop.*

**T. siliquosus** *Roth.* = **Lotus siliquosus** *L.* (Plate XI). Plant 6-12 in., covered with soft hairs. Stems prostrate or ascending. Leaflets obovate, apiculate, glaucescent. Stipules embracing, longer than the petiole. Flowers pale yellow, 1-2 on peduncles much longer than the leaf. Pod cylindrical, with 4 narrow wings.

Moist meadows and grassy places on the littoral, even at sea-level. April-July. In Switzerland this plant is chiefly sub-Alpine.

**T. purpureus** *Mænoch.* = **Lotus Tetragonolobus** *L.* Annual, softly hairy. Leaflets obovate, rhomboidal. Stipules ovate or lanceolate, acuminate. Flowers 1-2 on a peduncle as long as the leaves. Standard and wings a rich crimson, the latter with a yellow eye in centre of a darker spot. Pod with broad crinkled wings.

Road-sides and fields, very rare. March-May. Formerly recorded from a few places in both Departments and from near San Remo, and recently Mr. Raine of Hyères has found it in several places in his district and on the Isle of Porquerolles.

### LOTUS *L.*

\* *Annual plants, with slender root, usually with small tubercles.*

**L. parviflorus** *Desf.* Very hairy, slender. Leaflets oblong-lanceolate, acute. Stipules ovate, often longer than the petiole. Flowers yellow, turning green when dried, small, 4-6 in umbels on filiform peduncles, finally arched. Calyx-teeth almost as long as corolla, setaceous. Pod enclosed in the calyx, oblong, with valves not spirally twisting when ripe.

Dry, sandy places. April-June.

**L. hispidus** *Desf.* A rather taller hairy plant. Leaflets oblong, acute; stipules oval-lanceolate, longer than the petiole. Flowers yellow, turning green on drying, small (7-8 mm. long), 2-4 on stiff peduncles. Standard distinctly longer than keel. Pod short (8-15 mm.) rather thick, sometimes twice length of calyx.

Sandy fields and slopes and pine-woods. May-June.

**L. angustissimus** *L.* Plant hairy or rarely glabrous, often erect. Leaflets oblong-lanceolate. Stipules ovate-lanceolate, longer than the petiole. Flowers yellow, not turning green (6-7 mm. long), 1-2 on slender peduncles as long as the leaves. Standard not longer than the keel. Pod long, very slender, compressed, straight, many seeded.

Fields and sandy hill slopes. April-June.

**L. coimbrensis** *Willd.* = **L. coimbricensis** *Brot.* A slender glabrescent species. Leaflets rhomboidal. Stipules ovate, acuminate, longer than the petiole. Flowers whitish, with pink or mauve keel, small, solitary, on peduncles shorter than the leaves. Pod curved or sickle-shaped, very slender, narrow, linear, 30-40 mm. long.

Sandy or grassy places on the littoral, local. April-June.

**L. ornithopodioides** *L.* A stouter plant. Leaflets large, rhomboidal-cuneate. Stipules broadly ovate-rhomboidal, as long as the petiole or longer. Yellow flowers small, 2-5 on peduncles longer than the leaves. Calyx of 2 lips with unequal teeth. Pods in clusters, like a bird's foot, 30-50 mm. long, broadly linear, compressed, curved and bossed.

Sandy fields and grassy places, common. April-June.

**L. edulis** *L.* (Plate XII). A stout species. Leaflets obovate or oblong-cuneate, glaucous. Stipules broadly ovate, longer than the petiole. Flowers yellow, large, 1-2 on peduncles, 2-3 times length of leaves. Calyx-teeth equal, linear-lanceolate, twice length of tube, hairy. Pod very thick, fleshy, at length leathery, cylindrical, curved, deeply channelled on upper surface, 2 celled.

Sandy places on the littoral. April-May.

\*\* *Perennial plants with thick root-stock and no tubercles.*

**L. cytisoides** *L.* = **L. Allioni** *Desv.* Plant prostrate, slightly pubescent, greyish-green, fleshy. Leaflets oblong, cuneate. Stipules as long as the petioles. Flowers bright yellow, rather large. Calyx 2 lipped, teeth unequal, the 2 lateral of the lower lip shortest. Keel often mauve. Pod long, narrow, linear, compressed, straight or curved. A variable species.

Maritime rocks and banks near the sea. March-June.







1



2



3



4

PLATE XII.

1. *Bonjeania recta*.  
3. *Scorpiurus subvillosus*.

2. *Coronilla Emerus*.  
4. *Lotus edulis*.

**L. corniculatus L.** Bird's-foot Trefoil. Very polymorphic; glabrous or hairy in various stages. Leaflets usually obovate or oblong. Stipules ovate-lanceolate. Flowers yellow or with reddish standard, turning green on drying, 3-6 on very long peduncles. Calyx-teeth equal, hairy, as long as the tube. Pod broadly linear, straight.

Grassy places, hill-sides, and woods. May-July.

**Lotus tenuis Kit.** A tall, slender, glabrescent plant, sometimes considered a sub-species of the last. Stems much branched. Leaflets and stipules linear or linear-lanceolate. Flowers yellow, turning green on drying, 2-5 on long slender peduncles. Calyx-teeth equal, erect, acuminate. Pod slender, linear, straight, 20-30 mm. long.

Damp sandy places and shady hills. June-July.

**L. uliginosus Schk.** has been recorded from les Iles d'Hyères by Shuttleworth.

### PSORALEA L.

**P. bituminosa L.** (Plate XIII). An herb 2-3 ft. high, smelling strongly of bitumen when bruised. Stems furrowed, dark, branching. Leaflets of lower leaves oval, the upper ones lanceolate or linear. Stipules linear-lanceolate, acuminate. Peduncles axillary, very long, stiff, bearing heads of 10-15 light purple (or very rarely white) flowers. Calyx hairy, lower tooth longest. Pod ovoid, with compressed beak. Leaves trifoliate.

Sterile places in the littoral region, common. April-June. Occasionally it flowers in the winter.

### COLUTEA L.

**C. arborescens L.** Shrub, 2-3 yds. high. Leaves with 3-5 pairs of oval leaflets, usually emarginate and mucronate, glabrous. Stipules small lanceolate. Flowers yellow, rather large, in axillary cymes of 2-6. Calyx short, teeth 5, short, unequal, covered with black adpressed hairs. Pod stalked, pendent, becoming very large and inflated, the membranous sides curiously veined.

Limestone hills and mountain woods. May-June.

### BISERRULA L.

**B. Pelecnus L.** A prostrate hairy annual. Leaves imparipinnate, with 7-13 pairs of oblong entire leaflets. Flowers whitish, bluish at top, small, 3-10 in loose subglobular heads. Calyx-teeth equal, linear, as long as the tube. Pods 15-30 mm. by 6-8, in pendent clusters, broadly linear, edged with a row of teeth on each side separated by a rounded sinus. A very distinct plant.

Arid slopes and hill-sides. March-June. Not uncommon in the eastern part of the Var; rare in Alpes-Marit.

### ASTRAGALUS L.

\* *Pods linear, at least 3 times as long as broad, often glabrous.*

**A. glycyphyllus L.** Wild Liquorice. Glabrous, bright green; with strong zigzag stems spreading several feet over the ground. Leaflets in 4-6 pairs, ovate, 1-1½ in. long. Flowers dingy yellow, in racemes rather shorter than the leaves. Pods curved, glabrous, 1½ in. long, divided into 2 cells.

Shady woods and hedges in the hill and montane region. May-July.

**A. hamosus L.** Leaflets 8-12 pairs, oblong, wedge-shaped, emarginate. Lower stipules trifid. Peduncles rather shorter than the leaf, bearing short dense heads of 5-10 small yellowish-white flowers on very short pedicels. Pods cylindrical, shortly beaked, spreading and sickle-shaped, nearly glabrous at maturity. The flower heads become looser afterwards. Annual.

Waste, stony places, and dry sandy fields. April-May.

**A. monspessulanus L.** Root-stock thick and woody. Plant almost glabrous, green. Flower stalks and leaf stalks all radical. Leaflets small, oval, in 12-20 pairs. Stipules linear-lanceolate. Calyx glabrescent, with teeth about half length

of tube, often very red, as are also the petioles. Flowers usually purple but varying from nearly white to deep magenta, numerous, in oval heads elongated at maturity. Pods cylindrical, curved (25-35 mm. long), almost glabrous.

Dry, hot banks and limestone hills, extending to the mountains, local. April-June.

**A. incanus** *L.* Plant silvery with silky hairs, 3-8 in. high. Leaflets in 6-9 pairs, small, oblong or obovate, silky on both sides. Flowers purplish or nearly white, 8-20 in ovoid heads on radical peduncles as long as the leaves. Calyx hairy, with very short acute teeth. Pod cylindrical, arched, 15-20 mm. by 4, covered with whitish down.

Dry hills and arid places in the Var, local. April-June.

**A. sesameus** *L.* Annual. Leaflets in 8-10 pairs, oblong-elliptic, covered with whitish hairs. Flowers small, bluish, 4-10 in dense obovate heads, subsessile or on very short peduncles. Pods erect, 12-15 mm. long, nearly straight, subcylindric, hairy.

Dry, rocky places, rare. May. Near Nice and Le Pradet (Var).

\*\* *Pods somewhat ovate, very hairy or woolly.*

**A. pentaglottis** *L.* Annual, whitish with hairs. Leaflets in 7-10 pairs, upturned, elliptic or oblong. Stipules broadly ovate. Flowers purplish-pink, small, 10-20 in dense oval heads on peduncles as long as the leaves. Pods 10-12 mm. by 6 or 7 mm., erect, densely crowded, oval-elliptic, thick, covered with scaly hairs.

Dry, sandy places and arid hills. May-June. Frequent in the Var.

**A. glaux** *L.*, with 12-15 pairs of linear-oblong leaflets, and ovoid trigonous pod, has been found at the base of Coudon (Herb. Rouy).

**A. purpureus** *Lamk.* = **A. hypoglottis** *L.* See "Journal of Botany," July, 1912, where C. C. Lacaita in an able and logical paper proves these to be the same species; with which decision we entirely agree, though hitherto **A. hypoglottis** was usually considered the same as **A. danicus** *Retz.* which grows on the chalk in the east of England. Stem spreading, hairy like the whole plant with white spreading hairs. Leaflets elliptic or oblong, in 10-15 pairs. Flowers bright purple, rather large, in rather dense oval heads. Standard oblong, emarginate. Calyx hairy, tubular, with irregular linear teeth. Pods 10 or 12 mm. by 5 mm. erect, ovate, somewhat cordate at base, hairy.

Hot limestone hills and stony places, extending into the mountains. May-July.

**A. vesicarius** *L.* Plant silvery with silky hairs, 4-8 in. high. Root-stock woody. Leaflets oblong, 4-7 pairs. Stipules lanceolate-acute, free. Flowers large, violet with white wings, 5-10 in a rather loose globose raceme on long peduncles. Calyx swollen in the fruiting stage, and almost hiding the pod, woolly. In the Maritime Alps at Utelle above Grasse, etc., rare. May-June.

**A. aristatus** *L'Herit.* = **A. sempervirens** *Lam.* Woody at base, and forming great mats of spiny shoots. Stem very short, whitish pubescent. Leaflets linear-oblong, 6-10 pairs with spiny petioles. Flowers white or washed with lilac, erect, 3-8 in short, loose clusters, shortly peduncled. Calyx very woolly, with setaceous teeth equalling the tube. Pods oblong, subtrigonous, acuminate, glabrescent, seeds 8-12.

Dry places in the mountain and Alpine region. June-July. Very rare in the Var (Brovès) and more frequent in the Maritime Alps.

**A. massiliensis** *Lam.* = **A. Tragacantha** *L.* (part.). A spiny species with subligneous root-stock. Leaves whitish-green with spinous petioles and 6-12 pairs of oblong leaflets. Flowers white, large, 3-8 in loose peduncled heads, peduncles longer than in the last species. Calyx-teeth, lanceolate-obtuse. Pods oblong, subtrigonous obtuse, mucronate, hairy, with four seeds.

Maritime sands and rocks near La Seyne and St. Cyr in the Var. May-June.



**A. epiglottis** L. (a slender, annual, greyish species with triangular-cordate pods) is found above La Valette on the slopes of Coudon, and nowhere else in France. April-May. Leaflets narrow, 4-7 pairs.

No species of **Oxytropis** DC. or of **Phaca** L. descends to the limit adopted in this book. **Glycyrrhiza glabra** L. has been found naturalized on Querolles.

#### ORNITHOPUS L. BIRD'S-FOOT.

**O. perpusillus** L. Common Bird's-foot. Plant pubescent, slender, prostrate. Upper leaves sessile, with 5-12 pairs of oblong leaflets. Calyx-teeth half length of tube. Flowers very small, white mixed with yellow and pink, 3-8 on short peduncles. Bracts pinnate, rather longer than the head of flowers. Pods hairy, black when ripe, slightly curved, much constricted between the seeds. Sandy places, very rare in Alpes-Marit. (Nice, Antibes). May-July.

**O. compressus** L. Plant covered with whitish hairs, more or less prostrate. Upper leaves sessile, with 6-15 pairs of oblong leaflets. Calyx-teeth half length of the tube. Bracts pinnate, much longer than the head of small yellow flowers. Flowers 3-5 in umbells. Pod large, linear compressed, sickle-shaped, pendent when ripe, strongly striate of 5-8 articles not contracted between the seeds, the last article hooked. The three species are annual.

Dry, sandy places, common. April-May.

**O. ebracteatus** Brot. = **Arthrolobium pinnatum** Britten and Rendle.

(**Arthrolobium** is a small genus scarcely distinct from **Coronilla** and differing from **Ornithopus** chiefly in the want of floral leaves or bracts.)

Glabrous or slightly pubescent, green, diffuse, slender. Leaves all petioled, of 3-6 pairs of oblong spreading leaflets. Stipules very small. No leafy bracts. Flowers yellow on slender peduncles equalling the leaves. Calyx-teeth extremely short. Pods slightly constricted between the seeds, sickle-shaped, beaked, very slender, 10-14 jointed.

Maritime sands and sandy fields. April-May.

#### HIPPOCREPIS L.

**H. comosa** L. Horse-shoe Vetch. A glabrescent plant with perennial root-stock. Leaves pinnate, with a terminal leaflet. Leaflets in 4-7 pairs, linear-oblong, the lowest pair at a distance from the stem. Flowers bright yellow, like those of **Lotus corniculatus**, nodding, shortly pedicelled, 5-8 in an umbel on a peduncle twice the length of the leaves. Pods about an inch long, upper margin deeply notched opposite each seed, breaking up into 3-6 horse-shoe-like joints and finely pointed.

Dry, rocky banks, etc., especially on limestone. April-June.

**H. unisiliquosa** L. Annual, glabrous. Leaflets in 4-7 pairs, oblong. Flowers yellow, small, erect, solitary and almost sessile in the axils of the leaves. Upper lip of calyx with divaricate teeth. Pod solitary, very large,  $1\frac{1}{2}$  in. long, (2-4 cm.), glabrous, pale. Upper margin so deeply notched as to form completely closed rings between the joints (3-7). Claw of petal shorter than calyx.

Stony places and dry fields. April-May.

**H. multisiliquosa** L. = **H. ciliata** Willd. Annual, glabrescent. Leaflets in 3-5 pairs. Flowers yellow, small, pendent, 2-5 on peduncles nearly as long as the leaves. Upper lip of calyx with divaricate teeth. Claw of petal extending beyond the calyx. Pods 2-5, 2-3 cm. by 3-4 mm., almost always glandular and reddish, 5-8 jointed, with rounded notches almost completely closed.

Dry places and hill-sides, not common. April-June.

#### CORONILLA L.

\* *Flowers pink.*

**C. varia** L. Pink Coronilla. Plant glabrous, green, rampant. Stems herbaceous, hollow, often 3-4 ft. long. Leaves imparipinnate, of 7-12 pairs of

oblong leaflets, the lowest pair encircling the stem. Flowers whitish pink, rather large in rounded umbels on peduncles longer than the leaves.

Woods and shady places. May-July. Not common on the littoral.

**\*\* Flowers yellow. Leaves with 1-6 pairs of leaflets. Pods pendent or spreading.**

**C. scorpioides K.** A glabrous and glaucous annual. Leaves simple or more often trifoliate, the terminal leaflet oval and much the largest. Stipules united to form one small one opposite the leaf. Flowers 2-4 small, yellow, on a peduncle as long as the leaf. Pods curved, 30-40 mm. long, angular, striate, with 3-8 joints.

Stony fields and waste places. April-June.

**C. minima L.** A small plant with stems woody at base. Leaves with 3-4 pairs of obovate or cuneate-oblong leaflets, thick and glaucous, with narrow cartilaginous margin, lower pair touching the stem. Stipules joined into one very small one. Flowers in an umbel of 6-12, yellow, on a peduncle 2 or 3 times as long as the leaf. Upper lip of calyx truncate, entire. Pods pendent, angular, 3-8 jointed.

Dry hills, especially limestone. April-June.

**C. juncea L.** An under-shrub 2-3 ft. high, with straight, stiff, rush-like branches. Leaves glabrous and glaucous, with 2 or 3 pairs of linear-oblong leaflets. Stipules small. Flowers 5-8 in umbels on long peduncles. Pods pendent, slightly curved, linear, of 2-7 quadrangular joints.

Hill-sides and dry woods in the west of the Var. March-June. Frequent about Carqueiranne, Hyères, La Farlède, Solliès-Toucas, Saint Cyr, etc.

**C. Emerus L.** (Plate XII). A shrub 3-6 ft. high, glabrous. Leaflets in pairs of 2-3, obovate and slightly emarginate, the terminal one rather longer. Flowers large, yellow, 2-4 on peduncles shorter than or equalling the leaves; claw very long. Pods 2-4 in. long, linear, straight, 7-10 jointed.

Woods and shady, rocky places in the hills and lower mountains. April-June.

**C. glauca L. = C. pentaphylloides Rouy.** A glabrous, glaucous under-shrub 2-4 ft. high. Leaflets in 2-3 pairs, oblong-cuneate, very slightly emarginate, the lowest pair remote from the petiole. Flowers yellow, rather large, 5-8 in umbels much longer than the leaves. Calyx-teeth very short. Claw of petals scarcely longer than calyx. Pods pendent, short, 12-18 mm., straight, of 2-3 well-marked oblong joints and 2 obtuse angles.

Woods and rocky hill-sides, very rare. March-June. Near Hyères and La Valette.

**C. valentina L.** Under-shrub, glabrous and glaucous, 1½-3 ft. high. Leaflets in 3-6 pairs, oblong-cuneate, slightly emarginate. Stipules very large, orbicular, mucronate. Flowers yellow, rather large, 6-12 in umbels on peduncles twice length of leaves. Calyx-teeth short and unequal. Pods pendent, long, 4-7 jointed, with 2 obtuse angles.

Rocky places on the littoral about Menton, Monaco, St. Audre, La Mortola, etc.

### SCORPIURUS L.

**S. subvillosa L.** (Plate XII). Plant green, a foot high, slightly hairy. Leaves entire, broadly lanceolate, attenuated into a long petiole. Stipules linear. Flowers yellow with standard sometimes reddish, small, 1-4 in umbels on peduncles longer than the leaves. Calyx-teeth lanceolate acute, longer than the tube. Pods glabrous or hairy, cylindrical, irregularly spiral, covered with little bristles. Annual.

Fields and dry places, common. May-June.

**S. sulcata L.** Has long been naturalized at the foot of Mont Faron near Toulon. Its leaves are broader, calyx-teeth shorter, and the pod long and rolled in spirals in the same horizontal plane. April-June.<sup>1</sup>

<sup>1</sup> See Reynier, "Évolution, à Toulon, du *Scorpiurus sulcata L.* vers le *S. subvillosa L.*, et de l'un et l'autre vers le *S. muricata L.*" (in "Bull. de Géog. Bot.," Juillet, 1912).

**S. vermiculata** L. is a Spanish species naturalized near Toulon and Hyères. The leaves are broadly spatulate and the flowers solitary on peduncles shorter than the leaves. May-June.

#### HEDYSARUM L.

**H. humile** L. Plant covered with whitish down; root-stock ligneous. Leaves small, with 7-10 pairs of oval or linear leaflets. Flowers rose, rather large, 6-12 in oblong heads on long peduncles. Pods of 2-3 rounded joints, grained, tomentose, with thick border but not winged.

Dry hills. May-June. Very local in the Var.

**H. spinosissimum** L. Annual, whitish-tomentose. Leaflets small, in 5-8 pairs, oblong or linear. Flowers pale rose, 3-8 in umbels on long peduncles. Calyx-teeth longer than tube. Pod of 2-4 rounded joints, covered with hooked bristles, borders not winged.

Sandy or rocky places, rare. April-June. Fréjus, Toulon, Bandol, near Menton, and Nice.

**Bonaveria Securidaca** Scop. has been found in crops near Toulon, Nice, and Monaco.

#### ONOBRYCHIS L.

**O. caput-galli** Lamk. (Plate XIII). Annual, a foot high, greyish with pubescence. Leaflets in 5-7 pairs, rather distant, linear-oblong. Flowers purplish, very small, 3-6 in short loose spikes on peduncles, equalling the leaves. Calyx-teeth linear, acute, twice length of tube. Pod flat, orbicular, strongly toothed with unequal subulate spines and with little pits on the face.

Dry places. May-June. Common on the littoral.

**O. supina** DC. Pubescent, pale green; stems slender. Leaflets in 6-12 pairs, linear-oblong. Flowers pale rose with red veins, numerous, in long dense heads on peduncles much longer than the leaves. Standard longer than the keel; wings shorter than the calyx. Pod smaller, pubescent, the face covered with spines, and the outer suture keeled and edged with spines.

Dry hills, road-sides, and waste places. May-June.

**O. viciæfolia** Scop. = **O. sativa** Lamk. Common Sainfoin.

This is often cultivated in the South and found naturalized here and there.

**O. saxatilis** Lamk. Leaflets in 6-14 pairs, linear or narrow lanceolate. Flowers yellowish-white, veined, in elongated spikes. Pod neither toothed nor spiny.

Rocky places, rare. May-July. Toulon, Le Luc, Ollioules, near Drap, etc.

#### PISUM L.

**P. elatius** Stev. Wild Pea. Stems robust, flexuous, often over 3 ft. long. Leaves with 2 or 3 pairs of oval leaflets, entire or slightly crenate. Stipules very large, with rounded auricles, not spotted. Standard and keel rose-purple, wings dark purple; flowers large, 1 or 2 on peduncles about twice length of the stipules. Pods long, 6-10 cm. by 10-14 mm. Annual.

Woods, hedges, and thickets, rare. May-July.

#### LATHYRUS L.

\* *Petioles, at least the lower ones, deprived of leaflets.*

**L. Aphaca** L. Yellow Vetchling. Annual, glabrous. Stipules leaf-like,  $\frac{1}{2}$ -1 in. broad, entire ovate-hastate. Leaves reduced to tendrils. Flowers small, pale yellow, 1 or rarely 2 on long slender peduncles. Calyx-teeth twice length of tube. Pod 1-1 $\frac{1}{2}$  in. long, slightly falcate, glabrous.

Dry, sandy places, very common. May-June.

**L. Nissolla** L. Grass Pea. Annual, glabrescent. Stem erect, 1-2 ft. Leaves linear, grass-like, finely pointed, angular. Stipules minute, setaceous. Leaves (phyllodes) grass-like, entire. Peduncles very slender, 1-2 flowered.



Flowers crimson, or rose coloured. Pod 1-2 in. long, very slender, slightly compressed, glabrous. Seeds ovoid, brown, compressed.

Grassy places, stony fields and woods, rather rare. May-June.

**L. Ochrus DC.** Annual, glaucous. Stems broadly winged, climbing though robust. Lower leaves reduced to a leafy petiole, elliptical, ending in a branching tendril. Upper leaves with broadly winged petiole and 1-2 pairs of oval leaflets. Flowers solitary, pale yellow on short peduncles, articulated above the middle. Pod compressed, with 2 membranous wings on the back.

Fields and cultivated ground. April-June.

**L. Clymenum L.** (Plate XIII). Annual, 1-3 ft. high, glabrous, climbing. Lower leaves reduced to a leafy petiole, linear-lanceolate. Upper leaves ending in a branched tendril, with 2-4 pairs of lanceolate leaflets rather glaucous below. Peduncles about as long as the leaves, with 2-4 flowers, having purple standard and bluish wings. Pod channelled on the back. Seeds tubercular, rugose.

Borders of fields, sandy and grassy places; usually less common than the next. April-June.

**L. articulatus L.** A sub-species or perhaps a variety of the last, with more glaucous and sometimes purplish stems and leaves; obtuse style, not prolonged to a point, flowers 1 or rarely 2 on a peduncle, larger, rich purple-madder with pale lilac-blue wings. Pod not channelled, but flat keeled. **L. Clymenum** has other varieties and the whole series seems little understood, and the names somewhat confused. In the Var **L. articulatus** appears quite common, especially about Hyères.

Hill-sides, arid or sandy ground. April-June.

\*\* *Petioles with one pair of leaflets.*

**L. Cicera L.** Stems prostrate or climbing. Petioles narrowly winged, with branched tendril and 1 pair of linear-lanceolate leaves. Stipules lanceolate, acute, semi-sagittate. Peduncles thick, articulated in the middle, shorter than the leaf, with 1 rather large dark brick-red or crimson flower. Standard purplish-blue outside. Pod channelled along the back. Seeds smooth, grey marked with black. Annual.

Cultivated ground and fields, cultivated and naturalized. April-June.

**L. setifolius L.** Annual. Glabrous, stems slender, angular. Leaflets long, linear, very narrow, 1 pair. Tendrils branching, usually one at each leaf axil. Stipules linear, acute, semi-sagittate. Peduncles filiform, articulated near the top, longer than the petiole. Flowers small, brilliant dark red. Pod stipitate, broad and rather short; with 2 or 3 compressed tubercular seeds.

Stony fields and waste places. April-June.

**L. inconspicuus L.** A glabrous annual. Stem erect, a foot high, angular. Petioles aristate, with a pair of linear-lanceolate leaflets. Stipules narrow half sagittate. Peduncles very short, articulated at base, with one small pale lilac flower. Pod linear, fawn coloured, with 5-10 seeds.

Crops and cultivated ground, rare. May-July.

**L. hirsutus L.** (pale violet flowers turning blue, on long peduncles) grows in the Var, in fields and uncultivated ground. May-July.

**L. sativus L.** (flowers usually white) is often cultivated and occasionally naturalized. The seeds are poisonous to horses (see "Gard. Chron.," April 12, 1913).

**L. sphaericus Retz.** Annual, slender, glabrous. Upper petioles ending in a simple tendril, the lower ones in a short point, all with 1 pair of linear leaflets. Stipules linear, semi-sagittate, as long as the petiole. Peduncles articulated below the middle, with a bristle or mucro and 1 small brick-red flower. Pod linear, with strong longitudinal veins. Seeds globular, fawn coloured.

Sandy places near the sea and cultivated ground. May-June.

**L. angulatus L.** (Plate XIV). A slender annual, 1-2 ft. high. Leaflets 1 pair, linear, acute, upper tendrils branched. Flowers small, solitary, purple, on peduncles articulated near the top and having a long bristle. Pod linear. Seeds cubical, tubercular. The plant is too slender to admit of reduction in the figure.

Waste ground and cultivated fields, rather rare. May-June.

**L. pratensis L.** Meadow Vetchling. Leaflets lanceolate, acute; stem angled but not winged. Stipules large. Peduncles 3-10 flowered. Flowers yellow, often veined with reddish-brown. Pod short, black when ripe.

Grassy places and banks, common. May-July.

**L. tuberosus L.** Tuberous Vetchling. Root with ovoid tubers. Leaflets oblong or broadly lanceolate, glabrous, 1 pair. Stem climbing, angular. Peduncles long, 3-5 flowered. Flowers rather large, bright rose coloured. Pod linear cylindrical, glabrous, fawn coloured when ripe.

Crops and borders of fields, rare. May-June.

**L. sylvestris L.** Everlasting Pea. Climbing species 3-6 ft. long, glabrous. Leaflets linear-lanceolate, 1 pair. Wings of petiole narrower than those of the stem. Peduncles bearing 4-8 rather large flowers, dirty rose with greenish keel. Pods long, compressed, glabrous, with 3 inconspicuous ridges on the back.

Mountain woods and thickets. June-August.

**L. latifolius L.** Broad-leaved Everlasting Pea (Plate XIII). Stem climbing, broadly winged. Leaflets in 1 pair, oblong-lanceolate, thick, on a winged petiole. Flowers very large, bright magenta colour, 4-12 in a loose raceme, longer than the leaves. Peduncles long and robust. Pod broad and long, glabrous, with 3 ridges on the back. Seeds slightly tubercular.

Borders of fields, under olives, woods, etc., from the shore to the lower mountains. June-August. The var. **angustifolius**, illustrated on Plate XIII, is merely a narrow-leaved form.

**L. tingitanus L.** Stem climbing, 2-3 ft. long, robust, angled. A pair of oblong leaflets. Flowers very large, rich reddish-purple (the colour of the ordinary, old-fashioned Sweet Pea), 1 or 2 on peduncles about as long as the leaves. Pod large with depressed suture.

Waste places, very rare. May-June. This beautiful Pea is a native of Southern Spain, N. Africa, and Madeira. It is naturalized on the Isle of Porcorolles, though getting interfered with by building operations.

**L. annuus L.** (Plate XIV). Annual. Stems winged, climbing. Petiole ending in a branched tendril, and with a pair of linear-lanceolate or linear leaflets (variable). Peduncles about as long as the leaves. Flowers 1-3, dull yellow, with brownish stripes on the standard. Pods channelled on the back. Seeds tubercular, rugose.

Fields and uncultivated ground. May-June.

\*\*\* *Petioles with 2-6 pairs of leaflets.*

**L. ciliatus Guss.** has 2-3 pairs of linear-obtuse leaflets and small solitary pale blue flowers. It is a rare slender annual, found near Toulon and Le Luc.

**L. montanus Bernh.** A very variable plant, about a foot high, with winged stem and inflated nodes on the underground stolons. Leaves with 2-3 pairs of linear-oblong leaflets, glaucous beneath; but sometimes the leaflets are quite linear (var. **angustifolia**) and occasionally broadly oval. Inflorescence 4-6 flowered, equalling the leaves. Corolla crimson or purple-red, turning later a dull blue. Pods linear, glabrous, black when ripe.

Woods and shady places in the lower mountain region, especially in the Chestnut zone. April-June.

**L. vernus Bernh.** A glabrous species about 1½ ft. high, with angular stem. Leaves with 2-4 pairs of oval acuminate leaflets, green on both sides, shining and often ciliate. Flowers reddish-violet, then bluish, larger than the last. Pods linear, glabrous, brown when ripe. Seeds yellow.

Mountain woods, especially limestone. April-May.

**L. niger Bernh.** Glabrous, 1-2 ft. high, turning black on being dried. Stems erect, angular. Leaves with 4-6 pairs of oval or elliptic leaflets, glaucous above. Stipules linear. Flowers reddish-purple, then bluish, rather small, 4-8 in a loose cluster. Calyx-teeth very unequal. Pods linear,  $1\frac{1}{2}$ -2 in. long, black when ripe.

Mountain woods, especially on limestone. May-July.

**L. canescens Gren. et Godr. = L. filiformis Gay.** Leaves with 2-3 pairs of linear-lanceolate leaflets. Stem not winged but simply angular. Stipules narrow. Peduncles very long, with 5-10 large deep mauve or lilac-purple flowers (sometimes with white keel) which turn blue on drying. Calyx-teeth almost equal, broadly triangular. Pod linear, narrow, glabrous, fawn coloured. A beautiful plant.

Woods and grassy places among the hills, uncommon. April-June. There is a fine bank of this close to the village of Plan d'Aups; at Brovés, Château-double in the Var, etc.

#### VICIA L. VETCH.

\* *Flowers sessile or subsessile. Annual, except V. sepium.*

**V. sativa L. = V. communis Rouy.** Common Vetch. Leaves with 5-7 pairs of large oblong or cuneate leaflets, truncate or emarginate but very variable in size and shape. Stipules often with a dark blotch. Calyx-teeth nearly equal. Flowers solitary or in pairs, purple-red. Pod large, yellowish when ripe. Very polymorphic.

Fields, road-sides, and waste places, common. March-July.

**V. sativa** can be divided into various sub-species, varieties, and forms, nearly all of which are found on the Mediterranean littoral; but it is a matter of opinion as to what rank these should take; and the genus, and particularly this group, much needs monographing. Modern continental botanists have a tendency to consider such plants as **V. angustifolia**, **V. heterophylla**, and **V. amphicarpa** sub-species and no longer worthy of specific rank; but it may be better in a book of this description to adhere to the conservative view and describe them as species, especially as there are several well-marked *varieties* we wish to draw attention to. The more one studies European plants the more is he driven to believe that in respect to the subdivision of certain large and "critical" genera such as the present, the materials in one country, such as France, may give one result and those in another country, e.g. the British Isles, a somewhat different result. It is well known to students of the continental flora how very different and more varied many British plants are in certain places on the continent of Europe from the normal type which they assume in the British Isles. When we realize that often these differences are not constant, it behoves us to be all the more careful before giving a new varietal, and still more a new specific, name to a plant which we have not seen before and cannot match in the first great Herbarium we consult.

To return to **Vicia sativa**, there is a robust variety called **macrocarpa** = **V. macrocarpa Moris** with extremely large pods and flowers and larger and broader leaflets. It is commoner than the type in our district. Another, **V. cordata Wulf.**, which has large cordate leaflets and very large handsome flowers, is also quite common in the Var, especially in the lowlands.

Both flower from April to June.

**V. angustifolia L.** is distinguished from **V. sativa** by its almost linear leaflets of the upper leaves, its black not yellowish pod when ripe, and its smaller flowers. Several varieties and forms occur.

It grows in similar places and flowers from April to June.

**V. amphicarpa Dorthes.** This has whitish stoloniferous, subterranean branches, with oval, ivory-white pods under the earth. Flowers of 2 kinds, the underground ones have no corolla, and the others are rose, large, solitary, and subsessile. Leaflets oblong cuneate, narrow. Ordinary pods hairy, linear.

Dry places on the littoral, rare. Clearings of pine-woods, etc. April-June.





PLATE XIII.

1. *Onobrychis caput-galli*.

3. *Lathyrus Clymenum*.

2. *Psoralea bituminosa*.

4. *Lathyrus latifolius* var. *angustifolius*.



**V. heterophylla** Presl. = **V. cuneata** G.G. A slender species 6-10 in. high. Lower leaflets in pairs of 2-3, obcordate, without tendril; upper ones in pairs of 4-6, linear oblong, with a simple tendril. Flowers purple, rather small. Calyx glabrescent. Pod glabrous, 25-35 mm. by 4 or 5 mm., erect and blackish when ripe. **V. Timbali** Loret is a var. with narrow hairy leaves and larger crimson flowers, not uncommon in the Var.

Uncultivated fields, sandy pine-woods and under the olives, local. April-June.

**V. monosperma** H. S. Thompson in "Journ. of Bot.," 1906, p. 409. The original description in "Notes on the Flora of Porquerolles" is here transcribed because only two specimens of the plant are known to exist (one is in Herb. Brit. Mus.), and others are much wanted, especially as Mons. Alfred Reynier considers this the same as **V. pinetorum** Shuttleworth = **V. uncinata** Rouy = **V. stigmatica** Harry et Thol. (a Vetch which it is difficult to get authentic specimens of) and merely a form of **V. angustifolia** (see Reynier in "Bull. de la Soc. de France," Tome 55 (1908), p. 590-4).

"Annual, 50-60 cm.; pubescent, erect. Leaves with 4 (rarely 5) pairs of leaflets, each leaf having a simple or branched tendril; lower leaflets opposite, oval or obcordate, mucronate, upper leaflets narrowly linear lanceolate, 10-14 mm. long, obtuse, with a mucro, glabrescent above, with spreading hairs beneath. Lower stipules toothed sagittate, upper stipules entire, lanceolate, with a purple blotch. Calyx when in flower slightly hairy, with equal teeth two-thirds the length of the tube, which is 5 mm. long, calyx markedly veined, the five chief veins extending into long needle-like teeth. Flowers very small, scarcely exceeding the calyx, pale violet, upper part of standard yellowish in dried specimens, solitary or rarely in pairs, subsessile. Pod 15-20 mm. long by 4 mm. broad, black when mature, puberulent, solitary, somewhat sickle-shaped and gradually tapering into a long up-curved point. Seeds ovate, 3 mm. long, fawn-colour, blotched with dark brown, not tubercular, and only one in each pod (except in the case of one pod which has 2 seeds). My friend Mr. C. E. Salmon suggests that the tapering at the end of the pod is due to one or more seeds having become abortive.

"A slender plant with the habit of *V. angustifolia*, with sometimes from 8-11 solitary flowers in the axils of the leaves throughout the whole length of the stem.

"It grows in the clearing of pine-woods in the Island of Porquerolles, off Hyères, Var, France, flowering at the end of May and beginning of June." Then follows a paragraph showing how it differs from several closely allied and in some cases little-known Vetches. Neither the writer nor other botanists have since succeeded in finding similar plants at Porquerolles. Owing to a change of ownership the pine-woods in that part of the island have already undergone considerable change since 1906. It may appear elsewhere and on the mainland. Both Mons. Reynier in Provence and Mr. Salmon in England succeeded in cultivating a seedling from seeds from the only dried specimens, but neither came to maturity. We must therefore admit that failing further proof of the continuity of the mono-disperme pods, the description of this Vetch as a new species was somewhat premature, notwithstanding the large amount of research given to the matter at the time.

**V. lathyroides** L. A small species, more or less prostrate. Lower leaves without tendril, with 1 or 2 pairs of obcordate leaflets; upper ones with a simple tendril and 3-4 pairs of oblong-lanceolate leaflets. Stipules entire, not spotted. Flowers small, solitary, violet. Calyx-teeth equal. Pod glabrous, blackish and erect when ripe. Seeds almost cubical, shining, tubercular.

Sandy places, common. April-May. The var. **olbiensis** Reut. et Shuttle. has rarely been seen near Hyères (Olbia).

**V. peregrina** L. Stems slender, tall, erect, or climbing. Leaves with 3-6 pairs of very narrow leaflets almost tridentate at the top (i.e. they are deeply emarginate, with a mucro). Calyx-teeth almost equal. Flowers dull violet (16-18 mm.), solitary and axillary. Pod covered with appressed hairs. Seeds spotted with black.

Cultivated ground and sandy places. May-June.



**V. hybrida** L. = **V. Linnæi** Rouy (Plate XIV). Leaves with 5-7 pairs of truncate or emarginate, obovate-cuneate leaflets. Stipules simple or semi-sagittate, not spotted. Calyx-teeth unequal, hairy. Flowers large, solitary, subsessile, pale yellow, the standard striped with violet, and covered outside with velvety hairs. Pod broad, yellowish, covered with spreading hairs. Seeds brownish.

Cultivated places and borders of fields. April-June.

**V. lutea** L. Leaves with 5-7 pairs of mucronate, linear-oblong leaflets. One stipule usually spotted, simple or bifid. Calyx-teeth very unequal, glabrous, the two upper being short and connivant. Flowers pale yellow, or tinted with violet, large, axillary, subsessile; standard quite glabrous. Pod same size and shape as the last, but nearly black when ripe, and the hairs are tubercular at base.

Borders of fields and sandy places. April-June.

Var. **hirta** Loisel. = **V. hirta** DC. Differs from the last in its longer and narrower leaflets, its long spreading hairs covering the whole plant and its whitish flowers blotched with pink.

Borders of fields and under the pines on sandy soil. May-July.

**V. sepium** L. Bush Vetch. Perennial. Leaflets ovate or oblong, obtuse, in 5-7 pairs, green. Calyx-teeth unequal, the two upper ones short and connivant. Flowers pale violet, 2-6 in subsessile clusters. Pod 1 in. long, glabrous, black when ripe.

Woods, hedges, and shady places in the lower mountain region. April-July.

**V. melanops** Sibth. et Smith. Annual, climbing, 1-2 ft., downy. Leaflets oblong, in 5-7 pairs; tendrils branched. Flowers tricoloured, standard yellowish, wings purple-black at top, keel purplish, rather large, 1-3, subsessile. Pods 30 by 8-10 mm., glabrous but hairy on the joints. Yellowish when ripe.

Hilly places and dry woods in the Var, rare. May-June.

**V. pannonica** Crantz. (flowers yellow, tinted with red) is very rare in the Var.

**V. narbonensis** L. A stout erect annual. Lower leaves with one pair of leaflets but without tendril; upper leaves with tendril and 2-3 pairs of broad oval entire leaflets. Stipules large, toothed and often spotted. Calyx-teeth unequal. Flowers dull purple, darker on the wings, large, 1-5 in very shortly stalked clusters. Pod large, 50-60 mm. long by 10-12, with minute teeth on the sutures.

Crops and bordering fields, not common. April-June.

\*\* Flowers on a long peduncle; calyx-teeth shorter than the tube. Mostly perennial.

**V. bithynica** L. A climbing glabrous species 1-3 ft. high. Leaflets oblong or lanceolate, variable, in 1-3 pairs. Calyx-teeth equal. Flowers pale purple, wings paler or nearly white, 1-3 together on a peduncle varying in length. Pod hairy. Seeds beautifully mottled, black and dull green.

Borders of woods and fields, common. April-June.

**V. dumetorum** L. A climbing, green and glabrous species, 3-6 ft. long. Leaves with 4-5 pairs of large oval obtuse leaflets, and branching tendrils. Flowers at first purplish then yellowish, 3-8 in a loose cluster on long peduncle. Calyx-teeth very unequal, the two upper connivant. Pod glabrous, oblong compressed, fawn coloured when ripe.

Mountain woods in Alpes-Marit., rare. July-August.

**V. onobrychioides** L. A very handsome Vetch, almost glabrous and more or less climbing. Leaves with 5-8 pairs of linear leaflets. Flowers a beautiful rich violet with paler keel, large, 6-12 in a loose cluster. Calyx-teeth very unequal, the two upper short and connivant. Pods about 30 by 5 mm. glabrous, fawn coloured at maturity.

Fields and dry places in the hills and lower mountains. May-July.

**V. aitissima** Desf. (flowers bluish-white in long racemes) was discovered new to France in 1904 between Le Lavandou and Cavalaire (Var).

**V. Cracca** L. Tufted Vetch. A very rampant species. Leaves with 10 pairs of linear-oblong leaflets. Stipules entire. Flowers bluish-purple, 15-20 in a long dense unilateral raceme, on a peduncle often longer than the leaves, pedicels short. Pod obliquely truncate, many seeded.

The true plant is only found occasionally in our area on the borders of woods above Menton, Nice, Grasse, etc., chiefly in the Chestnut zone and above, but the two following sub-species are commoner, viz. :—

(i) **V. imbricata** Gilib. Fairly common in the Var. May, July.

(ii) **V. Gerardi** All. = **V. incana** Vill. A stiffer and shorter plant covered with long spreading hairs, leaflets more numerous and nearer together, racemes denser at the top of the stems. Standard with limb equalling the claw. Pod lengthened at the base into a narrow support. There seem to be many intermediate forms connecting this sub-species with **V. Cracca**, for which reason we prefer not to give it specific rank.

Mountain pastures, especially on limestone. June.

**V. tenuifolia** Roth. A handsome plant 3-6 ft. long, climbing. Leaflets linear-oblong in 8-12 pairs. Limb of the standard twice the length of claw. Flowers bluish-violet or mauve with whitish wings, 15-20 in very long clusters. Pods 20-30 mm. long, glabrous. The "Black-veined White" seems fond of this. In crops and thickets, chiefly in the montane region. June-July.

**V. dasycarpa** Ten. (1829) = **V. varia** Host. (1831). Stems climbing or spreading. Leaflets linear-oblong or linear, in 5-8 pairs. Tube of calyx swollen or bossed at the base, with unequal teeth. Flowers numerous, violet or pink and white in racemes longer than the leaves. Claw of standard twice as long as limb. Pod glabrous, on a stalk longer than calyx-tube.

Fields and hedges. May-July. Annual or perennial.

**V. villosa** Roth. (1793). Closely allied to the last and sometimes considered a variety of it. Plant covered with soft spreading hairs. Cluster of flowers quite plumose before flowering, owing to the long hairy teeth of the calyx. Flowers more pendulous (almost horizontal in **varia**).

Fields and crops. May-June. Probably annual.

**V. pseudocracca** Bert. Annual, 1-3 ft. rampant. Leaflets in 4-7 pairs. Stipules entire. Flowers bluish-violet with yellowish wings, large, opening at same time, 3-6 in short loose racemes exceeding the leaves. Standard longer than the wings. Calyx swollen at base, teeth unequal. Pod 30-35 mm. by 10, glabrous, on a pedicel as long as calyx-tube.

Garrigues, heaths, and on cultivated land. April, June.

**V. elegantissima** Shuttle. Annual, 8 in. - 1½ ft. long, climbing, slender, glabrous. Leaves with 5-7 pairs of narrow oblong-obtuse leaflets and branched tendrils. Stipules unequal. Flowers pale bluish-violet, 14-15 mm. long, 1 or 2 on peduncles half length of leaves (wings not yellowish). Calyx-teeth very unequal, and separated by almost truncate sinuses, the side teeth very small and narrow. Pod 20-30 mm. by 6-8 mm., glabrous, fawn colour, with 5-8 seeds.

Pine-woods and thickets at Porquerolles and the other Iles d'Hyères. Also near Agay in Alpes-Marit. Very rare. May-June. Mons. Cavillier<sup>1</sup> has written an elaborate paper on the subject of this Vetch, which he calls the variety **β. brevipes** (Willk.) Cavillier of **V. pseudocracca** which he considers a sub-species of **V. villosa**. It is also found in the Spanish province of Albacète, but not known elsewhere.

**V. atropurpurea** Desf. (Plate XIV). A softly hairy climbing annual species, 1-3 ft. long. Leaflets in 5-8 pairs, oblong, narrow. Flowers dark crimson (almost black) at tip, pale reddish-purple elsewhere. Calyx purplish-green, very unequally toothed, 2 short, 2 long, and 1 still longer tooth, all

<sup>1</sup> Note sur les caractères et les affinités du **Vicia elegantissima** Shuttle, in "Annuaire du Conserv. et du Jardin bot. de Genève" (1908).

silky and very acute. Flowers open more or less at same time and are very handsome, 4-10 in a unilateral raceme. Pod large and broad, hairy.

Dry ditches, borders of fields, etc., frequent in the Var but rather rare in Alpes-Marit. March-June.

**V. perennis** DC. appears to be a perennial variety of the last. Early in June, 1913, Mr. Raine pointed out to me in the corner of a field close to the English Church at Hyères a patch of *atropurpurea* he considered perennia., after several years observation. I dried a few specimens in an advanced stage and collected seed, which has germinated successfully in Surrey. The pods at Hyères were 9 x 30 mm. but often shorter and with only 1 or 2 seeds. Seeds large, oval (6 mm. long), black when ripe, slightly mottled with green. When nearly ripe the pods are purplish, and finally almost fawn coloured, pubescent or velvety.

\*\*\* Flowers on a long peduncle; calyx-teeth mostly longer than the tube.  
All annuals. Genus *Ervum* of Linnaeus.

**V. monanthos** Desf. Almost erect, 1-2 ft. high, bushy. Leaflets linear, truncate or deeply emarginate, in 5-7 pairs. Stipules unequal; one entire and sessile, the other petioled and divided into linear segments. Flowers bluish-white, with black spot at top, solitary on aristate peduncles. Calyx-teeth almost equal, stiff. Pod 30 mm. by 10, glabrous, with 2-4 seeds.

In crops and on sandy soil, very local. April-June.

**V. tetrasperma** Manch. = **V. gemella** Crantz. Four-seeded Vetch. A very slender plant. Leaflets 3-6 pairs, variable, usually narrow, obtuse or truncate. Peduncles 1-2 flowered. Flowers small, pale blue-lilac. Lower stipules bifid, upper ones entire, toothed on one side at the base. Pedicels slender, curved. Calyx-tube short, upper teeth shortest. Pod glabrous, 4-seeded. Fields and waste places. April-June.

**V. gracilis** Loisel. Slender Vetch. Usually stiffer than the last and much like it, but with 3-4 pairs of narrow more pointed leaflets. Peduncles longer, very slender, with 2-6 rather larger and sometimes darker lilac flowers. Pod longer, 4-8 seeded. Calyx-teeth shorter than the tube.

Fields and road-sides, less common. April-June.

**V. pubescens** Lk. Allied to the two last. Pubescent. Leaflets rather large, oblong, obtuse. Stipules linear, entire. Flowers pale, small, 2-5 on capillary peduncles, not aristate, equalling the leaf. Tendrils simple. Pod 15 mm. by 3 or 4 mm., nearly always pubescent. Seeds 5-6.

Dry, arid places, local. April-June.

**V. disperma** DC. Two-seeded Vetch. Glabrescent, slender, 1-2 ft. Leaflets in 6-10 pairs, linear-oblong. Stipules entire. Flowers bluish-mauve, small (4-5 mm.), 2-6 on aristate peduncles shorter than the leaves. Calyx-teeth very unequal. Pod glabrous, rhomboid-oblong, fawn coloured, turning reddish-brown, with 2 black velvety seeds. Whole plant often purplish.

Sandy fields and pine-woods in the littoral region, local. April-May.

**V. hirsuta** K. Hairy Vetch or Tare. Habit of **V. tetrasperma** but hairy. Leaflets 6-10 pairs, linear-obtuse mucronate, smaller than in **V. tetrasperma**. Stipules often 4-lobed. Flowers very small, bluish-white, 3-8 in short clusters on slender aristate peduncles. Calyx-teeth nearly equal. Pod very small, sessile, blackish, 2-seeded.

Fields and waste places, common. April-June.

**Vicia Ervilia** Willd. Erect, shrubby and leafy, a foot high. Leaves ending in a mucro, with 8-12 pairs of narrow leaflets. Flowers whitish-pink, veined with purple, 1-4 on rather short aristate peduncles. Calyx-teeth almost equal, equalling or longer than the tube. Pod strongly "bossed," yellowish, with 3 or 4 subglobular seeds.

Casual in the crops, vineyards, and cultivated fields, and often cultivated. May-July.







PLATE XIV.

1. *Lathyrus annuus*.  
3. *Vicia hybrida*.

2. *Lathyrus angulatus*.  
4. *Vicia atropurpurea*.

**Vicia nigricans** *Coss. et G.* = **Lens nigricans** *Godr.* Erect, 5-12 in. high. Leaves mostly ending in a mucro or upper ones in a short simple tendril. Leaflets 3-4 pairs, linear-oblong. Flowers bluish-white, 1 or 2 on aristate peduncles longer than the leaves. Calyx-teeth equal, 2-4 times as long as tube, hairy. Pod rhomboidal, compressed, glabrous, fawn coloured, with 1-2 seeds marbled with dark brown.

Dry and sandy places and stony slopes. April-June.

**V. nigricans** is closely allied to the cultivated Lentil. **V. Lens** *Coss. et G.* which is a larger plant, with simple or branched tendrils, 1-3 flowers on rather shorter peduncles, 5-7 pairs of leaflets and rather larger pods. It is often cultivated in the south and occasionally found as a casual.

**CICER L.**

**C. arietinum** *L. Pois-chiche.* An erect, hairy-glandular annual, 1 ft. high. Leaves imparipinnate, with 6-8 pairs of oval acuminate serrated leaflets. Flowers bluish-mauve or white, solitary on axillary peduncles which are articulated and with a bract in the middle. Calyx-teeth equal, the lower one widely separate from the rest. Pods large, much inflated, oval-rhomboidal, red when ripe, with 2 seeds.

A casual in crops and fields in Provence, etc., and often cultivated. June-July.

**ROSACEÆ.**

Series 1. *Ripe carpels not enclosed within the calyx-tube.*

Tribe I. PRUNÆ. Calyx deciduous. Carpel 1. Ovules 2, pendulous.

Fruit a drupe ..... PRUNUS.

Tribe II. SPIRÆ. Calyx persistent, ebracteolate. Carpels 5 or more. Ovules 2 or more in each carpel, pendulous. Fruit a follicle ..... SPIRÆA.

Tribe III. RUBEÆ. Calyx persistent, ebracteolate. Carpels many; ovules 2 in each carpel, pendulous. Fruit of many small drupes ..... RUBUS.

Tribe IV. POTENTILLEÆ. Calyx persistent, bracteolate. Carpels 4 or more; ovule 1 in each carpel, ascending. Fruit of 4 or more achenes.

*\* Style elongating after flowering.*

Leaves simple. Scape 1-fid. Styles of achenes feathery ..... DRYAS.

Leaves pinnate. Stem several-fid ..... GEUM.

*\*\* Style not elongating after flowering.*

Leaves 3-foliolate. Achenes on a large fleshy receptacle ..... FRAGARIA.

Leaves 3-many-foliolate. Achenes on a small dry receptacle ..... POTENTILLA.

Series 2. *Ripe carpels enclosed within the calyx-tube.*

Tribe V. POTERIEÆ. Petals 4-5 or 0. Carpels 1-3; ovules 1 in each carpel, erect or pendulous. Fruit of 1-3 achenes enclosed in the small dry calyx-tube.

Calyx 4-5 lobed, with 4-5 adnate bracts. Petals 0 ..... ALCHEMILLA.

Calyx 5-lobed. Petals 5. Stamens 12-20 ..... AGRIMONIA.

Calyx of 4 petaloid lobes. Petals 0. Stamens 4-30 ..... POTERIUM.

Tribe VI. ROSEÆ. Petals 4-5. Carpels many; ovules 1 in each carpel, pendulous. Fruit of many achenes enclosed in the fleshy calyx-tube ..... ROSA.

Tribe VII. POMEÆ. Petals 5. Calyx 1-5; ovules 2, collateral in each carpel, erect or ascending. Fruit fleshy, 1, 2 or 5-seeded.

Fruit large, 5-celled, cells with cartilaginous walls. Flowers in simple cymes. Styles 2 ..... PYRUS.

Fruit small, 2-5 celled. Endocarp brittle. Flowers in compound corymbose cymes. Styles 2-5 ..... SORBUS.



- Fruit 2-5 celled, truncate above, with 5 stones. Spiny shrub ..... *MESPILUS*.  
 Fruit a drupe with 1-5 included stones ..... *CRATÆGUS*.  
 Fruit a drupe with 3-5 half-exserted stones ..... *COTONEASTER*.  
 Flowers in simple clusters, petals narrow. Ripe fruit bluish-black. Leaves small, finely toothed..... *AMELANCHIER*.

### PRUNUS L.

**P. spinosa L.** Blackthorn. A spiny shrub, 4-8 ft. high, with nearly black bark. Leaves finely serrated, oblong or broadly lanceolate, on short petioles, finally glabrous beneath. Flowers white, half-inch in diameter, preceding the leaves; pedicels solitary or in pairs, glabrous. Petals obovate. Drupe half inch diameter, black, erect. Very variable.

Hedges, etc., common. February-March.

**P. avium L. = Cerasus avium Mærch.** Cherry. A tree, with short, stout, rigid branches. Leaves large, drooping, pale green, oblong-obovate, acutely serrate, pubescent beneath; petiole long. Flowers homogamous, in clusters of 2-6, corolla open, petals flaccid, almost obcordate. Fruit sweet or bitter, with red staining juice.

Woods in Alpes-Marit., not common. April-May.

**P. Mahaleb L. = Cerasus Mahaleb Mill.** Shrub 3-12 ft. high, much branched. Leaves rather leathery, ovate-cordate, acuminate, serrate, bright green, glabrous and shining. Flowers white, 4-8 in small erect corymbs, rather leafy at base. Fruit subglobular, as large as a pea, finally black, bitter, and acid.

Mountain woods, especially on limestone, rather rare. April-May.

### SPIRÆA L.

**S. Filipendula L.** Dropwort. Herbaceous, 1-2 ft. high. Fibrous roots with a few oblong tubers. Leaves interruptedly pinnate, chiefly radical, glabrous; leaflets numerous, almost pinnatifid, deeply cut, serrate, gradually smaller towards base of leaf. Cymes loose paniced. Flowers white, rosy outside, homogamous. Carpels pubescent, 2-ovuled.

Mountain woods and pastures, on limestone chiefly. May-June.

**S. Ulmaria L.** Meadow-Sweet. Herbaceous, leafy, 2-4 ft. high. Leaves interruptedly pinnate, serrate, white and downy beneath, segments ovate or broadly lanceolate, terminal segment large, acutely 3-lobed. Cymes corymbose, very compound. Flowers creamy-white, proterandrous.

Meadows and damp places in the mountain region of Alpes-Marit. June-July.

**S. Aruncus L.** A handsome plant about 3 ft. high with feathery white inflorescence. Leaves very large, often a foot long, triangular in outline, 2-3 pinnatisect, with opposite petioled segments and doubly toothed margins. No stipules. Flowers white, very small, sessile in large elongated panicles.

Mountain woods, gorges, etc., in Alpes-Marit. June-July.

### RUBUS L. BRAMBLE.

In the Var, as well as on the littoral of les Alpes-Marit., there are not many kinds of *Rubi*. Apart from *R. saxatilis*, *Idæus*, and *cæsius* (the two former in the mountains only) there are only two species of first-class rank, viz. *R. ulmifolius* Schott and *R. tomentosus* Borck. These two hybridise freely with *R. cæsius*. *R. dumetorum* Weihe is another good species found here and there on the coast and lower mountain region of Liguria, near San Remo, etc.

**R. ulmifolius Schott = R. discolor W. et N. part.** Barren stems more or less procumbent, channelled, glaucous plum-coloured, armed with robust, hooked prickles. Leaves green and glabrescent above, white-tomentose beneath, of 5 leaflets, slightly toothed, the terminal one obovate, suddenly acuminate. Flowering branch angular. Sepals tomentose, reflexed. Petals bright pink, suborbicular, crinkled. Styles pink. Polymorphic.

Woods, borders of fields, and hedges, common. June-August.

**R. tomentosus** *Borek.* Stems rather feeble, channelled, glandular, with small prickles. Leaves covered with whitish velvety tomentum beneath, with 3-5 deeply toothed leaflets, the terminal one obovate-rhomboidal, acute. Flowering branch angular, slender, with numerous small hooked prickles. Inflorescence elongated, narrow, more or less acicular-glandular, with ascending peduncles. Sepals tomentose. Petals narrow, yellowish-white. Stamens white, equalling the styles.

Hill-sides, road-sides, and dry places, common. May-July.

**R. cæsius** *L.* Dewberry. Stems prostrate, glaucous; prickles unequal, rather slender, setaceous. Leaflets usually 3, rhomboidal and coarsely toothed, green on both sides; sepals appressed, densely tomentose outside. Flowers white, in loose panicles. Drupes 2-5 large, glaucous, very acid. Very polymorphic, and hybridising freely, as stated above.

Woods, hedges, and waste places, common. May-June.

**R. idæus** *L.* Raspberry. Stems shrubby with many suckers; prickles slender, straight, but curved in flowering shoots. Leaflets 3-5, ovate or elliptic, acuminate, white and hoary beneath. Flowers drooping, petals short, linear-obovate. Drupes deciduous, many, yellow or rarely red.

Woods in the montane and sub-Alpine region of Alpes-Marit. July.

### GEUM *L.*

**G. urbanum** *L.* Common Avens. Plant hairy, 1-2 ft. high, erect. Root-leaves long petioled, interruptedly pinnate, terminal leaflet very broad, obscurely lobed, crenate; lateral leaflets oblong, sessile; cauline leaves variable. Stipules foliaceous, lobed and toothed. Flowers yellow, erect, at least half inch across. Peduncle slender. Achenes hispid, spreading; awn with a short glabrous hook at tip.

Shady, grassy places in the hills and mountains. May-July.

**G. silvaticum** *Pourr.* Wood Avens. About a foot high. Leaves silky, the lower ones long petioled, lyrate-pinnatisect with a very large terminal lobed and toothed segment. Stem-leaves small, toothed. Stipules oval, acute, dentate. Flowers yellow rather small, few; petals broad, deeply emarginate, with hardly any claw, twice length of calyx. Styles jointed near the middle. Achenes large, oval, with awn glabrous at tip.

Woods and pastures. May-June.

**G. rivale** *L.* Water Avens. Hairy, leafy, 1-2 ft. high. Leaves variable, with more segments than in *G. urbanum*, more toothed and larger lateral segments. Flowers 1-1½ in. diameter, drooping, dull purple tinted with orange, petals with long claw, as long as calyx. Styles jointed. Calyx lobes reddish-brown.

Near water in the Maritime Alps. June-July.

**Dryas octopetala** *L.* does not descend to within our limits in the Maritime Alps.

### FRAGARIA *L.* STRAWBERRY.

**F. vesca** *L.* Common Strawberry. Plant with numerous long stolons and scales between the leafy nodes. Radical leaves petioled, leaflets obliquely ovate or oblong, coarsely toothed or serrate, upper leaflets usually sessile; pedicles with silky appressed hairs. Stipules scarios. Scapes axillary. Flowers white, in irregular cymes. Calyx-lobes spreading, acute. Fruit red, covered with carpels, adhering to the calyx.

Woods and shady places. April-June.

**F. collina** *Ehrh.* Stolons few and furnished with a scale only between the parent plant and the first rooting rosette. Scapes rather shorter, very hairy, naked or with 1-2 leafy bracts. Leaves smaller, very silky beneath. Flowers white or cream-coloured, larger than the last (15-20 mm.). Calyx-segments adhering to the fruit. Fruit often whitish, with few carpels on lower part, very adhesive to the calyx.

Woods in the hills and hilly slopes. April-June.

## POTENTILLA L.

\* *Flowers yellow ; all leaves with 3 leaflets.*

**P. Tormentilla** L. Common Tormentil. Stem slender, rarely rooting, leafy, hairy. Leaves subsessile, radical ones petioled, leaflets obovate-cuneate, tip 3-4-toothed or lobed; cauline leaflets narrower. Stipules foliaceous, cut. Flowers at least  $\frac{1}{2}$  in. diameter, yellow; petals 4, slightly passing the calyx. Polymorphic.

Shady woods and dampish meadows, especially in the mountains. June-August.

\*\* *Flowers yellow ; root-leaves with 5-7 leaflets.*

**P. verna** L. Spring Potentil. Hairy, prostrate, with much-branched root-stock. Stems tufted, short. Lower leaves on long stalks, with 5-7 oblong toothed leaflets; upper leaves nearly sessile or shortly stalked, with 5 or rarely 3 leaflets, covered with silky hairs. Flowers small, yellow, in irregular panicles. Petals broad, longer than calyx. A very variable plant, sometimes almost glabrous.

Grassy or stony places, especially on limestone hills. April-May.

**P. argentea** L. Silvery Potentil. Stem ascending, branched above, covered with white silky hairs. Leaflets usually 5, incised, very white beneath, oboval, cuneate, lower leaves stalked, upper ones nearly sessile. Flowers small, yellow, in a loose corymb or panicle.

Dry, stony places in the mountains, rare. May-July.

**P. cinerea** Chaix. Hoary Potentil. A greyish or whitish-green prostrate species covered with stellate hairs. Leaflets 5, obovate-cuneate, deeply toothed, whitish on both sides, terminal leaflet shortest. Flowers yellow, large, few, in very loose corymbs. Carpels rugose. Polymorphic.

Rocks and borders of woods, rare. May-June. Cheiron above Grasse, between Cadière and Ollioules, Montrieux, etc.

**P. recta** L. = **P. hirta** L. var. *recta* Briq. Plant 1-2 ft., erect, green, leafy, hairy; with glandular hairs on the inflorescence. Leaflets 5-7, oblong, flat, very deeply toothed all round, strongly nerved, paler beneath. Stipules often cut. Flowers pale yellow, rather large, carpels with a membranous margin.

Open woods and uncultivated ground, not common. May-June.

**P. hirta** L. Hairy Potentil. Allied to the last, but quite covered with long white spreading hairs. Stems often reddish, leafy. Leaflets 5-7, obovate-cuneate, much contracted in lower half, feebly veined, toothed above only. Stipules entire. Flowers very large and handsome (25 mm.) on short pedicles, petals twice length of calyx-lobes. Polymorphic.

Dry woods and stony places. May-July.

**P. reptans** L. Creeping Potentil. Stems stoloniferous, often rooting at the nodes. Leaves petioled, leaflets 5, obovate-cuneate, green, slightly hairy, toothed almost all round. Flowers yellow, large, axillary, solitary, on very long peduncles. Stipules ovate, mostly entire.

Road-sides and waste ground, common. May-July.

\*\*\* *Flowers white.*

**P. micrantha** Ramond. Small-flowered Potentil. Resembling and taking the place of the common British **P. Fragariastrum**; very silky, scape slender, much shorter than the leaves, covered with soft hairs. Root-leaves with 3 obovate obtuse leaflets, silky, serrate all round; stem-leaves simple, 1 or 2. Petals white, shorter than the calyx (rarely pinkish).

Limestone rocks and wood clearings in the lower mountains, rather rare. Montrieux (behind Toulon), Esterel, Ste. Agnes above Menton, Forêt de la Mairis, etc.

**P. caulescens** L. Root-stock woody, stem ascending, leafy, cymosely branched, many flowered, covered with patent hairs. Root-leaves and lower



stem-leaves 5 partite, upper stem-leaves tripartite, passing into bracts. Segments wedge-shaped, serrated above the middle, silky below and at the margin. Petals narrow, wedge-shaped, white. Stamens and carpels very hairy.

Mountain rocks descending to Ste. Agnes above Menton and to the rochers de Margès and rocks by the river at Ampus. July-August.

**P. Saxifraga** *Ard.* A small tufted species, with woody stock. Radical leaves digitate with 5 lanceolate segments, irregular, glabrous above, silky and silvery beneath, with margin rolled in and 3-5 unequal teeth at top. Petioles long and slender. Flowers white on long, slender pedicels. Petals obovate, longer than the calyx. Carpels hairy.

Limestone cliffs in the Maritime Alps from about 2200 ft. Above Menton, at 870 m. where first discovered, Gorge de Saorge, San Dalmazzo di Tenda, Valley of the R. Var between the Vesubie and Tinèe, etc. May-June.

**P. rupestris** *L.* Rock Potentil. Stems 10-18 in. high, springing from an almost woody base. Leaves chiefly radical, pinnate, long petioled; leaflets 5 or 7, ovate, doubly toothed, green; stem-leaves fewer and smaller, often with only 3 leaflets. Flowers few, rather large, milk-white, in a loose corymb.

Rocks and stony, hilly places, especially in the mountains, local. May-July.

**P. alba** *L.* is found in mountain woods and rocks in Alpes-Maritimes. The root-leaves are digitate, with 5 ovate-lanceolate leaflets, green and glabrous above, silky and silvery beneath.

#### ALCHEMILLA *L.* LADY'S MANTLE.

In addition to the small **A. arvensis**, so common in sandy fields, the following species or sub-species of this difficult and little-understood genus are found in the higher mountains of the Var, viz. **A. alpina** *L.*, **A. glomerata** *G.* *Camus* (summit of Margès), **A. saxatilis** *Buser*, **A. splendens** *Christ.*, **A. Vetteri** *Buser*, **A. pubescens** *Lam.* In the Ligurian and Maritime Alps Messrs. Bicknell, Burnat, Gremlin, and Buser have determined various other species, but want of space in this volume precludes us from any attempt at description or arrangement. Moreover, though some of these plants are very pretty, especially in the foliage, they are of little importance.

#### AGRIMONIA *L.*

**A. Eupatoria** *L.* Common Agrimony. This well-known plant is common on the borders of fields and woods, and flowers from May to October. Leaves often 6 in. long, pinnatisect with very unequal segments, hairy or villous; calyx obconical, strongly ridged, tipped with hooked bristles after flowering. Flowers yellow, rather small, homogamous, in a long leafless spike.

#### POTERIUM *L.*

**P. muricatum** *Spach.* Plant 1-2½ ft. high, erect, robust, often reddish. Leaves imparipinnate, almost glaucous beneath. Leaflets oblong or ovate. Flowers in globular heads, on long peduncles. Fruit ovoid, 4 angled, reticulate, with deep hollows on the face, ridges muricate and toothed.

Dry, stony places, common. April-July.

**P. dictyocarpum** *Spach.* A rather smaller and more slender plant closely allied to the last. Leaflets broadly oval, coarsely toothed, usually glabrous. Flowers in globular heads, long peduncled. Fruit ovoid, the 4 sides are reticulate and separated by broader wings, less deeply pitted.

Woods and meadows, especially in the montane region. May-July.

**P. Magnolii** *Spach.* Closely allied to the two last and differing chiefly in its ovoid or subglobular fruits, covered with rough obtuse tubercles, irregularly and deeply sinuate-crenate. Leaflets broadly ovate, numerous, the lowest very small.

Dry arid places in the Var, especially near the sea. Iles d'Hyères, Carqueiranne, Esterel, La Falède, etc.

## ROSA L.

Those who require an account of the wild roses of the littoral region and lower mountains will find useful information, with shorter or longer descriptions, in Bicknell's "Flora of Bordighera and San Remo," Bordighera, 1896. It is impossible here to do more than mention a few of the most important and constant species, without allusion to the innumerable varieties.

**R. sempervirens L.** Common in hedges by water-courses, etc., in the littoral and lower mountain region. The leaflets are persistent through the winter, generally 5 in number, and shiny on both sides. The flowers are large and white, usually in a corymb. Fruit red, smooth, globose. May, June.

**R. arvensis Huuds.** In the montane region. Rare in the Var. May-June.

**R. pomifera Herm.** In the Maritime Alps and Ligurian Mountains. June.

**R. micrantha Sm.** Common in the greater part of the district. May-June.

The following are also typical viz.: **R. canina L.**, **R. stylosa Desv.**, **R. agrestis Savi.**, **R. Pouzini Tratt.**, **R. alpina L.** (in the higher mountains) and **R. pimpinellifolia L.** etc. The last named is found at Montrieux, Mont Coudon, La Martre, La Ste. Baume, etc., as well as in the Maritime and Ligurian Alps.

## PYRUS L.

**P. communis L.** Wild Pear. A shrub or small tree, sometimes slightly spiny. Leaves ovate, limb rather longer than petiole, at first cottony, afterwards glabrous and shining, fascicled on the last year's shoots. Flowers large (25-30 mm.), white. Styles free to the base. Fruit pyriform, 1-2 in. long. Polymorphic.

Woods, hedges, and road-sides. April-May.

**P. amygdaliformis Vill.** Shrub or small tree, with young shoots felted. Leaves oblong-lanceolate, cuneate at base, limb 2-4 times as long as petiole, white felted when young, later almost glabrous. Flowers smaller than the last, on woolly peduncles. Calyx-lobes persistent. Styles rather shorter than stamens. Fruit small, subglobular, with rounded base.

Dry places, hedges, woods. April-May.

**P. acerba DC. = Malus acerba Mérat.** Acid Apple-tree. A small tree; branches spreading, rather spiny. Leaves ovate-acuminate, toothed crenate, limb at least twice length of petiole, at first slightly hairy, very glabrous when fully developed. Flowers whitish-pink, petals downy below. Fruit large, 20-25 mm., very acid.

Hedges, woods, and rocks in the montane region. April-May.

## SORBUS L.

**S. domestica L.** Service-tree. A fairly tall tree, with shoots glabrous and viscous. Leaves pinnatisect, with 11-17 leaflets, which are oblong and serrate except at base, grey felted below, but glabrous later. Flowers white, 8-10 mm. in diameter, lobes of calyx turned down outwards after flowering. Styles 5, woolly. Fruit rather large, 3 cm. long, pear-shaped, reddish-green or rusty-red when ripe, falling in autumn.

Naturalized in woods. May.

**S. Aucuparia L.** Mountain Ash or Rowan-tree. Tree with downy shoots, not viscous. Leaves regularly pinnate, with 11-17 oblong leaflets, serrate almost to base, glabrescent when matured. Flowers creamy-white in showy corymbs, smaller than the last, very numerous and close set, 6-8 mm. diameter. Calyx-lobes curved inwards after flowering. Styles 3. Berries small and numerous, as large as peas, bright scarlet.

Mountain woods, rare. May-June.

**S. torminalis Crantz.** Wild Service-tree. Small tree with glabrescent shoots. Leaves green and glabrous on both sides when mature, broadly ovate-cordate, 6-10 lobed, lobes pointed, serrate. Flowers in corymbs small, white,

fewer and larger than in the Rowan, more numerous and rather smaller than in the White Beam-tree. Styles usually 2. Berries ovoid or globular, greenish-brown.

Woods in the hilly districts, uncommon. May.

**S. Aria Crantz.** White Beam-tree. Shrub or tree of moderate size. Leaves ovate or obovate, green and glabrous above, covered with a soft white cotton beneath, sharply toothed or sometimes slightly lobed, the lobes decreasing towards base. Flowers white, less numerous than in the Rowan-tree and rather larger, in corymbs at ends of the short leafy branches. Styles 2. Fruit an orange-red globular berry with mealy pulp.

Woods and rocks in the mountains. May-June.

#### AMELANCHIER *Medic.*

**A. vulgaris Mærch = Aronia rotundifolia Pers.** A shrub of 3-6 ft. Leaves ovate, obtuse, finely serrate, white felted beneath, but finally glabrous and leathery; blade twice length of petiole. Petals 5, rather long and narrow, flowers white, in small corymbs. Styles 5, united at base. Ovary inferior. Fruit globular, pulpy, sweet, as large as a large pea, bluish-black when ripe.

Limestone slopes, cliffs and rocks in the lower mountains. April.

#### MESPILUS *L.*

**M. germanica L.** Medlar. A much-branched shrub or small tree. Leaves large, oblong, downy beneath, entire or very finely serrate. Flowers  $1\frac{1}{2}$  in. diameter, white. Calyx woolly; lobes with dilated foliaceous tips. Fruit edible an inch in diameter, globose with a large depressed area at top, and persistent calyx-lobes.

Hedges and thickets, casual or perhaps naturalized. May-June.

#### COTONEASTER *Medic.*

**C. integerrima Medic.** Common Cotoneaster. Shrub, 2-3 ft., tortuous, without spines (as **C. Pyracantha**), young branches downy at the ends only. Leaves oval, small, entire, briefly acuminate, green and glabrous above, white felted beneath, deciduous. Flowers pinkish, 1-4 in small corymbs; calyx glabrous. Styles 2-3. Berries, pendent, purple-red when ripe, glabrous, shining, as large as a big pea.

Woods and rocks in the mountains. April-June.

**C. tomentosa Lindl.** Downy Cotoneaster. Shrub about 3 ft. high, tortuous, without spines; young shoots downy throughout. Leaves oval, large, entire, white felted beneath, deciduous. Flowers pink, in small erect corymbs. Calyx and peduncles tomentose. Berries erect, bright red when ripe.

Rocks, especially limestone in the mountains, scarce. April-June.

**C. Pyracantha Spach.** Spiny Cotoneaster. Shrub 3-6 ft. high, with spiny branches. Leaves persistent elliptical, glabrous and shining above, pubescent beneath when young. Flowers white, numerous, in branched corymbs. Styles 5. Berries erect, glabrous, scarlet when ripe, persistent in winter.

Woods and hedges near Cimiez, Contes, Berre, etc., rare. May.

#### CRATÆGUS *L.* HAWTHORN.

**C. monogyna Jacq.** A small round-headed tree, 10-20 ft., much branched, spiny. Leaves very variable, deeply pinnatifid, cuneate, shortly petioled, lobes cut or crenate. Stipules leafy, toothed. Flowers white, numerous in corymbose cymes. Anthers pinkish-brown. Fruit ovoid or subglobose, scarlet.

Woods and hedges, common. April-May.

**C. Oxyacantha L.** Common English Hawthorn. A sub-species differing from the former by its larger and less cut leaves, and its glabrous peduncles and calyx-tubes.

Woods and hedges. April-May. Rare in the south.



**C. Azarolus L.** Represented by the var. **ruscinonensis Gren. et Blanc.** Small spiny tree, 12-18 ft. high. Leaves deeply divided into 3-5 lobes, entire or toothed. Young branches and peduncles downy or tomentose. Calyx hairy. Styles 2, rarely 1. Fruit rather large, acid and rather pleasant to the taste.

Woods, hedges, and garigues, sometimes ascending the mountains, rare. April-May.

#### MYRTACEÆ.

Fruit a small ovoid nearly black berry. Evergreen shrub .....MYRTUS.

Fruit a number of berries enclosed in a large coriaceous capsule .....PUNICA.

#### MYRTUS L.

**M. communis L.** Myrtle. An aromatic evergreen shrub, 3-10 ft. high. Leaves opposite, close together, subsessile ovate-lanceolate, acute, entire, leathery, persistent, glabrous and shining. Flowers white, axillary, solitary, long peduncled, sweet-scented. Calyx-tube attached to ovary, with 5 spreading lobes; petals 5, stamens numerous. Fruit an ovoid berry nearly black. The leaves are sometimes silvery from the attacks of an insect of the *Thrips* genus, like those of *Arbutus* and *Laurustinus*.

Woods, garigues, and maquis, common. March-May.

#### PUNICA L.

**G. Granatum L.** Pomegranate. A branched and slightly spiny shrub 6-16 ft. high. Leaves opposite, oblong-lanceolate, entire, leathery, glabrous, shining. Flowers bright scarlet, large, sessile, solitary or 2-3. Calyx red, fleshy with the tube attached to the ovary. Fruit very large, subglobular, fleshy, reddish-yellow with many seeds.

Naturalized in rocky places and sometimes seen in hedges. June. Indigenous in the Orient and introduced into Europe by the Phœnicians and Arabs.

**Eucalyptus globulus**, introduced from Australia, is a large tree often seen on the Riviera, flowering from January to March. The limb of the calyx covers the flower before expansion, and afterwards falls off in the shape of a lid or cover. Leaves sickle-shaped when mature. Some of the finest specimens in France are in the Jardin d'acclimatation at Hyères.

#### ONAGRACEÆ.

Petals 4, usually pink. Stamens 8. Capsule long.....EPILOBIUM.

Petals short or 0. Stamens 4. Capsule short .....LUDWIGIA.

Petals 2. Stamens 2 Capsule obovate .....CIRCÆA.

Petals 4, yellow (usually). Stamens 8 .....CENOTHERA.

#### EPILOBIUM L. WILLOW-HERB.

**E. angustifolium L. = E. spicatum Lamk.** Rose-bay. A handsome plant, 2-4 ft. high. Root-stock creeping, and hence and owing to the numerous light seeds carried far by the wind, this plant is rapidly increasing in Europe. Leaves lanceolate, very shortly petioled, finely toothed or entire. Flowers large, bright, purplish-rose, in long terminal spikes. Pod 1-2 in. long.

Wood clearings in the mountain region above 800 m. rare. July, August.

**E. rosmarinifolium Hænke.** Erect, about 2 ft. high. Leaves linear, not veined, often fasciated at the nodes. Flowers large, deep rose, in short leafy corymbs. Style as long as stamens. Stigmas spreading or reflexed.

Beds of torrents in the hills and lower mountains. June-August.

**E. montanum L.** Stem 8-24 in., erect. Leaves mostly opposite, glabrous, oblong-ovate, acute toothed, sometimes petioled. Flowers  $\frac{1}{2}$  in. diameter, pale purple. Stigma-lobes short, not revolute. Capsule 2-3 in. pubescent.

Damp woods in the hills and lower mountains, common. June-August.

**E. tetragonum** *L.* Polymorphic. Leaves linear-lanceolate or oblong-lanceolate, toothed, sessile. Stems usually with 2 or 4 raised lines or obtusely angled, branched, tough. Flowers  $\frac{1}{2}$  in. diameter, rose-lilac, erect. Pods 2-4 in. long.

Damp places, occasional. June-October.

**E. parviflorum**, **E. hirsutum**, **E. lanceolatum** and several other species of **Epilobium** occur in the district.

#### LUDWIGIA *L.*

**L. palustris** *Elliot* = **Isnardia palustris** *L.* A glabrous plant with pro-cumbent or floating stems rooting at the nodes, 4-angled. Leaves opposite, ovate or elliptic, petioled, shining. Flowers 4-merous, minute, axillary, sessile, green. Bracts subulate. Capsule obovate, with 4 green angles.

Lakes and ditches, very rare. Vaugrenier near Antibes, Valley of Mourrefrey, near la Verrerie, La Garde-Freinet.

#### CIRCÆA *L.*

**C. lutetiana** *L.* Enchanter's Nightshade. Plant 1-2 ft. erect, glandular-pubescent. Leaves ovate, cordate at base, faintly toothed, long petioled, covered with translucent dots. Flowers very small, white or pink, in lax erect terminal racemes; pedicels slender, jointed at base, reflexed in fruit.

Damp mountain woods. June-August.

#### OENOTHERA *L.*

The four following species from America or Tasmania are naturalized in the Var, according to Albert and Jahandiez: **O. biennis** *L.*, **O. longiflora** *Jacq.*, **O. stricta** *Ledeb.*, and **O. speciosa** *Nuttal.* Their flowers are yellow, and they grow in sandy places.

#### LYTHRACEÆ.

Calyx tubular. Petals exceeding calyx-teeth.....LYTHRUM.  
Calyx campanulate. Petals minute or 0 .....PEPLIS.

#### LYTHRUM *L.*

**L. Salicaria** *L.* Loosestrife. Erect, 2-3 ft. high. Leaves lanceolate, with cordate base, opposite or whorled. Flowers whorled, 3 merophic; in long spikes. Stamens 12. Petals narrow oblong, bright reddish-purple.

Damp places, by rivers, etc., common. June-September.

**L. Græfferi** *Ten.* = **L. flexuosum** *Lag.* Stems creeping and rooting, glabrous. Leaves oblong lanceolate or elliptic, with rounded base, sessile, mostly alternate. Flowers purple, solitary in the axils of the upper leaves. Calyx glabrous, with 2 small scabrous bracts at base, with 12 nearly equal teeth. Petals 6, equalling the length of the calyx. Stamens 12 of which 6 are prominent.

Borders of damp roads, etc., on the littoral. June-August.

**L. Hyssopifolia** *L.* Annual, glabrous. Leaves linear-lanceolate, entire sessile, mostly alternate. Flowers solitary, axillary, small, lilac. Petals 5-6, equalling half of the calyx. Bracts scarious, very small. Stamens 5 or 6, included in the calyx.

Damp sandy places flooded in winter. May-August.

**L. Thymifolia** *L.* A small slender annual, very leafy. Leaves narrow linear, finely toothed, very close set. Flowers rose, very small, solitary. Bracts herbaceous, inserted at base of calyx and equalling it in length. Calyx with 8 teeth, slightly shorter than the 4 petals.

Damp sandy places flooded in winter, rather rare. May-July.

**L. Salzmanni** *Ford.* and **L. Loiseleurii** *Rony et Camus* also occur.

## PEPLIS L.

**P. erecta** *Reg.* Annual. Leaves opposite, sessile obovate. Flowers reddish, solitary, axillary, small; petals quickly falling. Capsule ovoid, shorter than tube of calyx. Calyx ovoid cylindrical, with 10-12 teeth.

Places flooded in winter, rare. June-August.

**P. Portula** L. (a creeping annual with opposite oblong or obovate leaves, and minute sessile reddish flowers in the leaf axils) is found in the Var at Fréjus, Le Luc and les Pesquièrs near Hyères, rare. May-September.

## CUCURBITACEÆ.

Fruit globular, smooth; plant with tendrils ..... BRYONIA.

Fruit oblong, muricate; plant without tendrils ..... ECBALIUM.

## BRYONIA L.

**B. dioica** *Jacq.* White Bryony. An ornamental hispid climber. Leaves palmately 5-lobed, petioled, suborbicular, cordate lobes sinuate. Flowers diœcious. Corolla  $\frac{1}{2}$  in. in diameter, hairy, greenish-yellow. Berry red. Root very large, tuberous. It climbs by means of spiral tendrils.

Hedges, but more common in the mountain region. May-August.

ECBALIUM *Rich.*

**E. Elaterium** *Rich.* Wild Cucumber (Plate XVI). Plant hispid with stiff hairs; stems spreading, succulent and thick. Leaves thick triangular-cordate, sinuate-dentate, greyish-green beneath. Flowers yellow, veined, monœcious, in axillary clusters; the females often solitary and shorter. Fruit large, greenish, oblong, hispid, opening with elasticity and squirting out the seeds with force when ripe.

Rubbish heaps, old walls and not stony places on the littoral. April-September.

## CRASSULACEÆ.

Leaves opposite. Petals 3-5, free, minute, like the plants. Stamens

3-4 ..... TILLÆA.

Leaves alternate. Corolla 5-lobed. Stamens 10 ..... COTYLEDON.

" " Sepals and petals 4-5. Stamens 8-10 ..... SEDUM.

" " Sepals and petals 6-20. Stamens 12-40 ..... SEMPERVIVUM.

## TILLÆA L.

**T. muscosa** L. Mossy Tillæa. Annual, very small in all its parts, often only  $\frac{1}{2}$  in. high, but usually about an inch. Stems often reddish. Leaves ovate, acute or lanceolate, green or reddish, succulent. Flower sessile, axillary, white, very small, 3-merous.

Sandy places on the littoral, not common. April-May.

**T. vaillantii** *Willd.* Annual, glabrous, very small, delicate, often reddish. Stems erect, slender, forming little loose tufts. Leaves linear-oblong subobtuse nearly flat, in distant pairs. Flowers pinkish, very small, on pedicels longer than the leaves, and forming irregular cymes.

Damp, sandy places flooded in winter, in the Var. April-June. Rather rare.

## COTYLEDON L.

**C. umbilicus** L. = *Umbilicus pendulinus* DC. Pennywort or Navelwort. Stem erect, composed of fleshy joints much compressed. Leaves peltate, orbicular, crenate (more or less) very fleshy. Flowers greenish-white, in long spiked racemes. Radical leaves petioled, depressed in the centre. Rootstock tuberous.

Rocks, walls, etc., common. April-June.



This is one of the commonest plants found growing on the Palms at Hyères.<sup>1</sup>

**SEDUM L. STONECROP.**

\* *Flowering stems usually without sterile shoots; leaves flat.*

**S. maximum Hoff.** A tall robust species 1-2 ft. high. Leaves very large, oval-obtuse, toothed, the lower ones auricled. Petals acute, 3 times length of calyx, flowers pale greenish-yellow, in a corymb with opposite or whorled branches.

Old walls, rocks, and borders of streams, local. August-September.

**S. Telephium G.G.** Orpine, Livelong. Plant robust, 1-2 ft. high. Leaves oblong, coarsely toothed, not auricled. Petals acute, 3 times length of calyx. Flowers numerous, reddish-purple in a loose corymb, with opposite or alternate branches.

Rocks in the mountain region of Alpes-Marit., scarce. July-August.

**T. Anacampseros L.** Plant robust, 6-12 in. high, glaucous. Leaves obovate, very obtuse, entire. Petals obtuse, rather longer than calyx; flowers rose, in a very dense umbellate corymb. Stems creeping.

Rocks in the high Maritime Alps, rare. July-August.

**S. stellatum L.** Annual, short. Leaves oboval obtuse, flat, toothed, elongated into a petiole. Flowers sessile, star-shaped, pink, in a scorpioid raceme. Capsule obtuse, spreading like a star. Style very short.

Stony places on the littoral, rather rare. May-June.

**S. Cephæa L.** Annual or biennial, finely pubescent, with slender stems. Leaves oblong spatulate, entire, opposite or whorled in fours. Flowers white or pinkish, pedicelled, in little clusters forming a loose panicle.

Damp rocks and banks, rather rare. July-August.

**S. alsinifolium All.** Slender, 2-6 in. high, pubescent or glandular, with 1 or 2 sterile shoots springing from a rosette of small broadly oval leaves. Stem-leaves few, spreading, oblong-spatulate, small. Flowers white, on long pedicels, in a loose few-flowered panicle. Petals ovate, acuminate.

Damp rocks in the montane region of les Alpes-Marit., rather rare. July.

\*\* *Leaves subcylindrical, small. Annual.*

**S. rubens L.** Annual, 2-6 in. high, pubescent glandular, reddish. Leaves cylindrical, obtuse, sessile, spreading. Flowers pinkish-white; sessile, small, rather unilateral, in a glandular raceme. Sepals 5, oval-triangular. Petals 5, lanceolate, aristate, 3 times length of calyx.

Fields and dry uncultivated places, uncommon. May-June.

**S. cæspitosum DC.** Annual, entirely glabrous, reddish, smaller than the last. Leaves oval, obtuse, subcylindric, sessile, imbricate. Flowers pinkish-white, unilateral in few-flowered glabrous cymes. Sepals 4-5, ovate-triangular. Petals 4-5.

Arid, stony places, rather rare. April-May.

\*\*\* *Flowering stems with sterile shoots; leaves small; perennial.*

**S. album L.** White Stonecrop. Plant 3-8 in. high, glabrous, green or often reddish. Leaves cylindrical, linear, obtuse. Flowers white, often spotted with red, pedicelled in loose dichotomous corymbs. Rather variable in colour and size, etc.

Walls, rocks, etc., common. June-August.

**S. dasyphyllum L.** Thick-leaved Sedum. Glaucous, 2-6 in. high. Leaves very thick, compressed on inner side, usually opposite, glabrous or glandular. Flowers pinkish-white, on short pedicels, in irregular corymbs. Petals oval, subobtuse. Filaments hairy at the base.

<sup>1</sup> See Thompson, H. S. "Plants Epiphytic upon Palms at Hyères" in "Journal of Botany," April and December, 1913.

Old walls, rocks, and banks, common. May-July. Also frequent on the Palms at Hyères, etc.

**S. altissimum** Poir. Plant 1-2 ft. high, with erect leafy stems, glabrous and glaucous, and with densely imbricate leaves on the barren shoots. Leaves ovoid-lanceolate mucronate, thick. Flowers subsessile, very pale yellow in a dense corymb.

Borders of fields, rocks, and stony hills, common. June-July.

**S. anopetalum** DC. = **S. ochroleucum** Chaix. A foot high, glaucous, glabrous, with barren shoots covered with densely imbricate leaves. Leaves cylindrical, mucronate, shortly spatulate at base. Flowers very pale yellow, subsessile, in a spreading erect corymb. Petals erect, linear, twice length of calyx. Stamens glabrous.

Stony hills and waste places, fairly common. May-July.

The small, bright yellow flowered **S. acre** L. is much less common in the south than in England. **S. reflexum** L. is fairly common on walls and stony places in les Alpes-Marit.

**S. sexangulare** L. (a small plant with pale yellow flowers in a slender corymb and small linear obtuse close-set leaves) grows here and there in the Maritime Alps, and the glandular **S. villosum** with pink flowers is recorded from damp meadows near Ampus in the Var. The true **villosum** L. is unknown in the Mediterranean district and this is the variety **pentandrum** G.G.

#### SEMPERVIVUM L.

**S. tectorum** L. House-leek. Sub-species **S. calcareum** Ford. Robust, at least a foot high, stem springing from a dense rosette of large obovate oblong leaves, ciliate, suddenly narrowed into a mucro. Stem-leaves oblong, submucronate. Flowers rose, in a long dense spiky corymb. Corolla star-shaped, petals twice as long as the 12 sepals.

Here and there on rocks in the montane region. July-August.

**S. arachnoideum** L. Cobweb House-leek. Rosettes with lanceolate or obovate leaves, abruptly acute, covered with short glandular hairs, stiffly ciliate, bearded at apex with radiating web-like hairs, uniting the ends of the leaves. Petals narrow lanceolate acuminate, 3 times length of calyx, rose-red with a darker streak. Stem and stem-leaves often red.

Rocks in the Alpine and mountain districts (May-July) descending in the Var to Morière above Solliès-Toucas, the summits of la Cabrière, etc.

#### SAXIFRAGACEÆ.

Ovary 2-celled; styles 2. Stamens 10. Petals 5 .....SAXIFRAGA.

Ovary 1-celled; styles 2. Stamens 8 or 10. Petals 0.....CHRYSOSPLENIUM.

Ovary 1-celled; stigmas 3-4. Stamens 5; petals 5 .....PARNASSIA.

#### SAXIFRAGA L.

**S. tridactylites** L. Rue-leaved Saxifrage. A small annual pubescent viscous species, often reddish. Root-leaves entire or 3-lobed, spatulate, stem-leaves alternate, 2-5 lobed but usually 3-lobed. Flowers small, white, on slender pedicels. Sepals erect, elliptical.

Old walls, rocks, etc., common, especially on limestone. March-May.

**S. granulata** L. Meadow Saxifrage. Root-stock reduced to a cluster of small bulbs. Stem erect, 6-18 in., branched and many-flowered above, pubescent glandular. Leaves petioled, reniform, palmately lobed, cauline sessile. Flowers white, rather large, campanulate in terminal cymes. Calyx-lobes erect obtuse, as long as tube. Capsule with slender beaks.

Damp, shady places in the hills and lower mountains. April-June.

**S. aizoides** L. Yellow Saxifrage. Stems leafy, bearing a many-flowered racemose cyme, but often only 2-3 flowered, hairy at summit. Leaves glabrous, fleshy, grass-green, nerveless, entire, linear, mucronate, more or less ciliate,

crowded at apex of the shoots. Petals linear-lanceolate, yellow or orange or sometimes deep orange-red. Stamens orange-yellow.

Damp places in the Maritime Alps, descending e.g. to San Dalmazzo di Tenda (2280 ft.). June-August.

**S. cuneifolia** L. Glandular at top, 6-12 in. high. Rosette leaves petioled, obovate cuneate, very obtuse, leathery, glabrous and shining, toothed with a narrow cartilaginous margin. Flowers white, in a narrow panicle. Sepals reflexed; petals spreading, oblong, punctuated with yellow at base. Capsule twice length of calyx. Flowering stem leafless.

Damp rocks and in woods of the montane region of Alpes-Marit., descending to the district above Menton, etc. June-July. Common in the chestnut zone in Liguria.

**S. lingulata** Bell. Stem 6-18 in. long, glabrous, often drooping, branching from the middle or sometimes lower, with several small linear and sometimes indented leaves. Rosette leaves, linear-oblong, elongated, channelled above, rather pointed at apex, thick, entire, with an encrusted indentation at the curved-in margin. Rosettes rather loose and erect. Flowers milk-white, in long and rather unilateral panicles, with branches of 2-6 flowers. Calyx glabrous, but slightly rugged, with lanceolate-obtuse lobes. Petals ovate, wedge-shaped. Stamens subulate.

Limestone rocks in the mountains, very local. Common on the Col de Tenda and on the mountains above Menton and Grasse. June-July.

In the Var it grows on the Margés escarpments, and was recorded from Sainte-Baume by Robert and Hanry, but the plants we saw growing at Sainte-Baume are very glandular and identical with specimens from the Mont de la Chens (N. of the Var) in Herb. Jahandiez which agree better with **S. lantoscana**.

**S. lantoscana** Boiss. et Reut. Stem usually shorter than in **S. lingulata** of which it is sometimes considered a variety or sub-species. Rosette-leaves linear spatulate, broader towards apex, with white calcareous patches, obtuse and shorter than in **lingulata** and not channelled. Flowers milk-white, with fine lines of red dots. Inflorescence more or less unilateral. Calyx campanulate, with lanceolate-obtuse teeth.

Limestone rocks in the district round St. Martin Lantosque in the Maritime Alps, at Mont de la Chens in the Var, at Sainte-Baume with **S. Alzoon** Jacq. (fide H.S.T.), and probably in Liguria. The last species is very rare in the Var.

See "Kew Bulletin" (1911), No. 3, and "Gard. Chron.," 16 March, 1912, December, 1874, 23 August and 1 November, 1913, for various notes on these two Saxifrages.

**S. cochlearis** Reichb. Stem 4-12 in., glandular except at summit, slender, reddish-brown, branching above middle into a usually short and sometimes glandular panicle, with usually 3 flowers on each branch. Rosette-leaves quite short, broadly linear at base and suddenly dilated into a suborbicular, spoon-shaped apex, coriaceous and rugged in texture, encrusted at margins with lime. Stem leaves narrowly oboval, very small and slightly glandular. Flowers milk-white; petals obovate, wedge-shaped. Calyx glandular, with obtuse lobes.

Sub-Alpine limestone rocks in the Maritime Alps and adjoining mountains of Liguria, where it descends to about 1300 feet at Buggio in the Nervia valley, and ascends to 5500 feet. Also found on Mt. Mulacé above Menton. Endemic in this district. June-July.

**S. hypnoides** L. Mossy Saxifrage. Rosette leaves 3-5 cleft, glabrous or more or less ciliate. Leaves of barren shoots entire or 3 cleft, narrow, linear and pointed. Stems 3-6 in. long, with very few linear leaves, and from 1-6 rather large white flowers. Calyx-segments pointed and not one-third as long as petals.

Moist rocky places in the limestone mountains of the Var; not uncommon. May-June. Apparently this is its most southern and eastern limit in Europe.



## PARNASSIA L.

**P. palustris** L. Grass of Parnassus. Stem 6-12 in. high, with a single perfoliate leaf below the middle, and a solitary, terminal, beautiful white flower. Root-leaves petioled, broadly heart-shaped, acuminate, entire, glabrous. Petals obovate, beautifully veined, twice length of sepals, which are ovate and spreading. Capsule globular, 3-4 valved.

Wet places in the lower mountains and sub-Alps, uncommon. July-September.

## RIBESIACEÆ.

## RIBES L.

**R. grossularia** L. Gooseberry. This well-known prickly shrub is found in hedges and thickets in the montane and sub-Alpine region of both Departments.

**R. alpinum** L. Grows in rocky places in the sub-Alpine forests.

**R. nigrum** L. (Black Currant) is perhaps indigenous in the mountain region of les Alpes-Maritime and it is often cultivated.

**R. rubrum** L. (Red Currant) is sometimes found well established near houses; and **R. petræum** Wulf. grows in shady, rocky places in mountain and sub-Alpine woods, e.g. Val de Pesio and St. Etienne-le-Sauvage (Ardoine).

## HALORAGACEÆ.

**Myriophyllum verticillatum** L. and **M. spicatum** L. are found in stagnant water here and there on the littoral. May-July.

## FICOIDEÆ.

## MESEMBRYANTHEMUM L.

**M. nodiflorum** L. A small annual species not exceeding a foot in length, and the only one indigenous, in a few places, on the Riviera. Leaves cylindrical obtuse, fleshy, glabrous; stems glaucous, covered above with little crystalline papillæ. Flowers solitary, shortly peduncled; petals very small, white, yellowish at the base. Fruit with 5 angles.

Sands and rocks by the sea, very rare. April-May. In the bed of R. Baillon near Nice, Cannes, Ile de Bandol, Ile de Porquerolles.

**M. acinaciforme** L. Stems long, thick, fleshy, knotted, creeping or falling in festoons and forming great carpets. Leaves opposite, sessile, persistent, fleshy, green or sometimes reddish, trigonous. Flowers very large, often 3 inches or more across, pale pink, deep magenta, pale violet, white or yellowish. The pair of long upper bracts on the flower stalk, fleshy and connate. Two exterior sepals large and foliaceous.

Originally from the Cape of Good Hope, this plant is now naturalized on the whole of the littoral and also in the Iles d'Hyères. It is especially common on railway banks and often by the sea-shore. March-May.

**M. edule** L. Is a closely allied species from the Cape with rather smaller magenta flowers and broader and flatter leaves. The pair of bracts on the flower-stalk are opposite and connate, as in the last, but much shorter and (together) more cup-shaped. The sepals are smaller and more membranous.

It is common on the littoral region, and sometimes grows with the last. Both species begin to flower in March or April on the Riviera, but this species is rather later than the other.

## CACTACEÆ.

## OPUNTIA DC.

**O. Ficus-indica** Mill. = **Cactus Opuntia** L. Prickly Pear, *Figuier de Barberie* (Plate XV). Plant very fleshy, 3-6 ft., spiny, without leaves. Stems composed of fleshy, compressed, oval or oblong, joints, superimposed at the edges, and



Prickly-pears (*Opuntia grandis*) and Olives near Hyères, Feb. 4



Common Prickly-pear (*Opuntia Ficus Indica*) at Les Ameniers near Toulon (April), where it clothes a rocky limestone bank





covered with little bundles of prickles which are hooked and very fine. Flowers yellow, large, sessile, solitary on the edge of the upper joints. Fruit ovoid, dark purplish-red, pulpy and very red when cut, and covered with bundles of very fine hooked hairs which immediately get into the flesh when handled.

Rocks, walls, and banks, widely spread, May-July. Originally from Mexico, it is often cultivated and frequently naturalized. Here and there other species occur as escapes from gardens.

UMBELLIFERÆ.

"The subdivision of Umbellifers into genera is much more difficult . . . and the modern genera, founded upon a nice appreciation of minute differences in the fruit and seed, are often very artificial, or still more frequently reduced to single species, and require as complete a revision as the Crucifers and Composites."—GEO. BENTHAM.

Series 1. *Umbels simple, or very irregularly compound, or flowers capitate. Vittæ 0 or obscure.*

Tribe I. HYDROCOTYLEÆ. Fruit laterally much compressed; commissure narrow ..... HYDROCOTYLE.

Tribe II. SANICULEÆ. Fruit subterete, or dorsally compressed; commissure broad.

Leaves spinous. Umbels densely capitate, involucre spinous ..... ERYNGIUM.

Leaves palmate. Bracts very large. Fruit rough, with sinuate or dentate ribs ..... ASTRANTIA.

Leaves palmate. Fruit with hooked spines ..... SANICULA.

Series 2. *Umbels compound. Ridges sub-equal or primary the most conspicuous (except in Coriandrum). Vittæ usually obvious.*

Tribe III. ECHINOPHEÆ. Fruit without scales. Umbels 6-8 rayed. Plants prickly ..... ECHINOPHORA.

Tribe IV. AMMINEÆ. Fruit laterally compressed; commissure narrow.

Section 1. SMYRNIÆ. *Fruit short, ovoid or didymous; ridges not winged. Seed grooved ventrally.*

Vittæ several. Disk-lobes depressed; ridges elevated. Fruit glabrous with sinuate ribs ..... CONIUM.

Vittæ several. Disk-lobes conical. Fruit of 2 globular carpels ..... SMYRNIUM.

Section 2. AMMINEÆ proper. *Fruit as in 1, but seed flat ventrally.*

\* Petals entire, tip acute or shortly inflexed. Vittæ 1-2.

Leaves simple. Flowers yellow ..... BUPLEURUM.

Leaves compound. Flowers white, diœcious ..... TRINIA.

Leaves compound. Flowers white, 2 sexual ..... APIUM.

\*\* Petals 2-lobed, tip long inflexed. Vittæ solitary in the furrows.

Calyx-teeth obsolete. Vittæ as long as the fruit ..... CARUM.

Calyx-teeth minute. Root a solitary tuber. Leaves 2-3 pinnate ..... BUNIUM.

Calyx-teeth obsolete. Vittæ very short ..... SISON.

Calyx-teeth obsolete. Rays of umbels very numerous ..... AMMI.

Calyx-teeth 5. Rays of umbels 10-20. Leaves digitate ..... FALCARIA.

\*\*\* Petals as in \* but vittæ several in each furrow (except in *Ægopodium*).

Calyx-teeth acute. Leaves pinnate ..... SIUM.

Calyx-teeth obsolete. Leaves 2-ternate. Vittæ 0 ..... ÆGOPODIUM.

Calyx-teeth obsolete. Leaves various. Vittæ many ..... PIMPINELLA.

Section 3. SCANDICINEÆ. *Fruit elongate. Seed grooved ventrally.*

\* Vittæ many in each furrow, often faint ..... CONOPODIUM.

\*\* Vittæ, 0 or 1 in each furrow.

Fruit 1-3 in.; ridges prominent ..... SCANDIX.

Fruit  $\frac{1}{2}$  inch; ridges vanishing upwards ..... CHÆROPHYLLUM.

Fruit  $\frac{1}{2}$ - $\frac{1}{3}$  inch; ridges 0 or obscure ..... ANTHRISCUS.

Tribe V. SESELINÆ. Fruit globose or ovoid, not laterally compressed; commissure broad, lateral ridges distinct, rarely winged.

- \* Fruit subterete; ridges not thickened or corky.  
 Calyx-teeth small. Petals white, notched ..... SESELI.  
 Calyx-teeth obsolete. Petals yellow, entire ..... FŒNICULUM.  
 \*\* Fruit globose; ridges low, secondary broadest ..... CORIANDRUM.  
 \*\*\* Fruit subterete; primary ridges acute, outer coat of pericarp lax. CRITHMUM.  
 \*\*\*\* Fruit subterete; primary ridges thick, lateral forming a corky rim round the carpel.  
 Bracteoles whorled. Calyx-teeth prominent ..... CENANTHE.  
 Bracteoles unilateral ..... ÆTHUSA.  
 \*\*\*\*\* Fruit subterete; lateral ridges thickened or winged ..... SILAUS.  
 \*\*\*\*\* Fruit dorsally compressed; lateral ridges broadly winged; wings of opposite carpels not appressed ..... ANGELICA.

Tribe VI. PEUCEDANÆ. Fruit much dorsally compressed; lateral ridges broadly winged; wings of opposite carpels appressed (face to face); other ridges filiform. Styles short, stout.

- Plant glabrous; petals ovate, acuminate, entire; leaves very compound and cut into linear segments ..... FERULA.  
 Plant hairy; leaves simply lobed, ternate or pinnatisect ..... OPOPONAX.  
 Wings with thin margins; vittæ as long as the fruit ..... PEUCEDANUM.  
 Wings with thin margins; vittæ club-shaped ..... HERACLEUM.  
 Wings with thick margins ..... TORDYLIUM.

Series 3. *Umbels usually compound; secondary ridges more distinct than the primary; sometimes spinous.*

- Bracts pinnatifid or laciniate. Seed flat in front ..... DAUCUS.  
 Bracts entire or o. Seed grooved in front ..... CAUCALIS.  
 Fruit covered with bristles between the primary ridges ..... TORILIS.  
 Bristles of secondary ridges in 2 or 3 series. Umbels 2-8 rayed ..... ORLAYA.  
 Wings 8; flowers white or rarely pinkish; fruit slightly compressed ..... LASERPITIUM.  
 Wings 4; flowers usually yellow. Fruit much compressed ..... THAPSIA.

### ERYNGIUM L.

**E. maritimum L.** Sea Holly. Plant prickly, very glaucous or bluish, 1-2 ft. high, stout, 3-chotomously branched. Root-leaves suborbicular, 3-lobed spinous, stem-leaves palmate. Heads 2 or 3 together, 1 in. diameter, ovoid. Primary involucre of 3 bracts; partial of 5-7 ovate spinous-serrate bracts. Flowers bluish-white.

Sandy shores, common. June-August.

**E. campestre L.** Plant erect, pale green, 1-2 ft. high. Root-leaves pinnately 3-5 foliolate; stem-leaves 2-pinnatifid. Less glaucous and more branched and more slender than the last. Involucral bracts 4-6, linear, entire, pale green. Flowers whitish, in globular heads.

Field borders, road-sides, etc., very common. June-September.

**E. spina-alba Vill.** Plant whitish-green, very spiny, robust. Involucre silvery-white, very leathery, of 10-20 erect, strongly nerved bracts. Flowers white. Fruit ovoid, covered with lanceolate acute scales.

In the montane and sub-Alpine region of the Maritime and Ligurian Alps, rare. July-August.

### ASTRANTIA L.

**A. major L.** Stems 1-2 ft. high or higher, erect, furrowed, glabrous like the whole plant. Leaves palmately 5-fid, lobes lanceolate, acute, simple, or 2-3 cleft, doubly serrate, radical, and lower stem-leaves long-petioled. Secondary umbels many-rayed. Bracts of general involucre net-veined, coloured white and red like the petals, 2-3 cleft, upper ones usually entire, bracts of partial involucre lanceolate, entire, coloured.

Mountain pastures of the Maritime Alps from about 700 m. June-August.



PLATE XVI.

1. *Ecbalium Elaterium*.      2. *Orlaya grandiflora*.      3. *Tamarix africana*.  
4. *Crucianella maritima* (a. nat. size; b. floral bracts).      5. *Lonicera implexa* (c. fruit).





## ECHINOPHORA L.

**E. spinosa** L. Plant 1-2 ft. high, glaucous, robust, prickly. Leaves pinnatisect or pinnatifid, segments fleshy, stiff, spiny. Umbels of 5-8 short unequal rays. Stem thick, angular. Flowers white.

Maritime sands, common. July-October.

## CONIUM L.

**C. maculatum** L. Hemlock. Stems 2-5 ft., spotted purple, stout, furrowed, leafy. Leaves very large, deltoid, finely 2-pinnate, segments pinnatifid, flaccid. Umbels shortly peduncled; rays 10-20. Female flowers open after the males which are smaller. Fruit greenish-brown. Poisonous.

Waste places and road-sides, uncommon. May-August.

## SMYRNIUM L.

**S. Olusatrum** L. Alexanders. Stem 1-3 ft., solid, furrowed, paniced. Root biennial. Stem-leaves petioled, 3-foliolate, serrate, shining. Petioles large, sheathing, margins hairy. Leaflets broadly obovate, obtusely serrate or lobed. Umbels subglobose, rays very variable. Fruit  $\frac{1}{2}$  in. dark brown; ridges variable. Flowers yellow.

Waste places, hedges, etc., sometimes in abundance, as e.g. in the Avenue du Centurion, Hyères. February-May.

**S. perfoliatum** Mill. is sometimes seen in sandy woods, etc. April-June. Its stem-leaves are suborbicular cordate, embracing the stem, and with crenate margin.

## BUPLEURUM L.

\* *Partial involucre with ovate or ovate-lanceolate bracteoles.*

**B. rotundifolium** L. Hare's-ear. Annual, 10-18 in. high, erect glaucous, stem hollow. Lower leaves oblong, upper ones broadly ovate or suborbicular, apiculate, perfoliate. Involucre 0; partial involucre of 3-5 broadly ovate, yellowish, leafy, bracteoles, longer than the many short rays, connate at base. Flowers yellow.

Dry fields. June-August. Less common than the next species.

**B. protractum** Lk. et Hoffm. = **B. subovatum** Lk. Leaves ovate-oblong, narrower than the last, perfoliate. Umbels 2-3 rayed. Bracts of general involucre 0. Partial involucre of 3-5 bracteoles, widely spreading. Stems 1-2 $\frac{1}{2}$  ft. Flowers yellow. Annual.

Fields and crops, common on the littoral. May-July.

**B. ranunculoides** L. Very polymorphic. Except in the higher mountains only the var. **telonense** Gren. is found in the Var. Stem-leaves ovate-lanceolate. Umbels 4-12 rayed; involucre of 2-4 bracts; partial involucre of 5-6 spreading bracteoles. Flowers yellow. The type is found in the sub-Alpine and mountain region of Alpes-Marit. and the variety on the top of Mont Faron, near Toulon, and elsewhere in the Var. June-August.

**B. opacum** Willk. et Lge. = **B. aristatum** G.G. Annual, glaucous. Leaves half amplexicaul, linear-lanceolate, acute. Umbels dense, terminal, of 2-5 short unequal rays. Involucral bracts broadly lanceolate, cuspidate, longer than the rays. Partial involucral bracteoles shorter, membranous, aristate.

Dry, hilly places in the Var. May-July.

**B. fruticosum** L. Under-shrub 3-6 ft. high, with leafy branches. Leaves leathery, persistent, oblong, mucronate, sessile and narrowed at the base. Umbels of 8-20 equal rays. Involucre and partial involucre of lanceolate, deflexed bracts, falling at maturity. Fruit oblong, with prominent acute ridges.

Limestone rocks near the top of Mont Faron near Toulon. June-August. It also grows on the steep slope near the road in ascending Sainte-Baume from Gémenos, just outside the boundary of the Department of the Var.

\*\* *Partial involucre with lanceolate-linear bracteoles.*

**B. junceum** *L.* Annual, 2-3 ft. high, bright green. Stem erect, rush-like, much branched at top. Leaves long, broadly linear, acuminate. Umbels numerous, with 2-3 slender unequal rays. Involucre of 2-3 linear-lanceolate bracts. Partial involucre of 3-5 linear-lanceolate bracteoles, rather shorter than the flowers.

Dry, stony places, woods and fields. June-August.

**B. Gerardi** *All.* Annual, 1-2 ft. high, rather glaucous. Leaves linear. Umbels small, 5-7 rayed; involucre of 5 linear-lanceolate bracts. Partial involucre of 3-5 linear bracteoles rather longer than the fruits, which are oblong and shining. Flowers yellow. Plant polymorphic.

Fields and sterile places, local. June-August.

**B. glaucum** *Rob. et Cast.* Annual, 4-8 in. high, rather glaucous. Stems slender, with short divaricate branches. Leaves linear-acuminate, short. Umbels small, of 3-6 slender irregular rays. Involucres of 5 linear segments. Fruit subglobular, small, hispid with little white tubercles.

Sandy places and maritime fields. May-June.

**B. tenuissimum** *L.* (a slender wiry annual with few linear grass-like leaves) is recorded from Golfe Jouan and Ile Ste Marguerite. Its near ally

**B. semicompositum** *L.*, a glaucous grey annual species with slender wiry stem, with divaricate branches, short linear acuminate leaves, and small umbels of 3-6 rays, has been found on the sandy Isthmus of Giens near Hyères.

**B. affine** *Sabl.* on sandy places at St. Aygulf, and **B. rigidum** *L.* on dry slopes at Le Luc, La Farlède, Ampus, etc.

TRINIA *Hoffm.*

**T. vulgaris** *DC.* Honewort. Stem 3-8 in. branched from base, stout, branches divaricate. Leaves spreading, glabrous, pinnately compound, petiole and linear segments slender. Flowers white, usually dioecious, males with narrower petals. Male umbels depressed, female irregular, rays longer; bract 3 cleft or 0; bracteoles 2-3 linear. Flowers minute.

Stony and limestone hills, local. May-July.

APIUM *L.*

**A. graveolens** *L.* Celery. Plant glabrous, 1-2 ft. high. Leaves pinnate, with 3 or 5 distinct broad segments, crenate or 3-lobed; upper leaves very small. Umbels small, nearly sessile on the upper branches opposite the leaves; rays 3-6, of numerous small flowers on short pedicels. Fruit very small. Plant strongly scented.

Marshy places, especially near the sea, uncommon. June-September.

**A. nodiflorum** *Reichb.* Stems creeping and rooting at the base, the annual flowering branches nearly erect; whole plant glabrous. Leaves with 3-12 pairs of ovate or lanceolate toothed segments. Umbels nearly sessile or on short peduncles, each with from 4-8 rays. Partial involucre of several small lanceolate bracteoles.

Ditches, marshes, and streams, common. June-July.

CARUM *L.*

**C. Carvi** *L.* Caraway. Biennial. Stem erect, branched, 1½-2 ft. high. Leaves with a long sheathing footstalk, pinnate, with several pairs of sessile segments, which are once or twice pinnate, with short linear lobes. Umbels of 8-10 rays, sometimes with 1 or 2 small linear bracts. Carpels linear-oblong, with prominent ribs.

Meadows and pastures in the mountains. May-August.

**C. segetum** *Benth.* = **Petroselinum segetum** *K.* Corn Parsley. A glabrous branched slender annual 1-1½ ft. high. Leaves chiefly radical, simply pinnate, with 5-10 pairs of sessile, ovate, toothed or lobed segments; upper leaves merging into linear bracts. Umbels very irregular, the rays few and







1



2



3



4

PLATE XVII.

1. *Scabiosa maritima*.  
3. *Calendula arvensis*.

2. *Bellis silvestris*.  
4. *Senecio Cineraria*.

unequal. Partial umbels, few-flowered, some sessile, others on pedicels of various lengths. Flowers very small, white.

Borders of fields on clayey soil, rare. July, August. Hyères, Cap Brun, etc.

#### BUNIU M Schur.

**B. Bulbocastanum L. = Carum Bulbocastanum K.** Root-stock of globular tubers, known as pig-nuts. Root-leaves 2-3-ternate, segments stalked and pinnately divided into a few linear lobes. Involucres of a few very fine bracts. Carpels more slender than those of the Caraway with less prominent ribs.

Fields, hill-sides, and pastures, and in crops in the montane region. May-July.

**B. incrassatum Lange.** Root at first globular, then irregular. Stem erect, stiff, angular and striate at the top. Leaves 2-3-pinnatisect, with linear segments. Umbels of 7-14 irregular divaricate rays, stiff and thick when fruiting. Involucre of 6-8 linear-lanceolate bracts. Fruit linear cylindrical with sharply keeled sides.

In fields in the Var occasionally, but never certain to reappear. March-May.

**Sison Amomum L.** (Hedge Sison) occurs here and there by hedges and ditches, June-September; **Ammi majus L.** in fields in the south of the Var, June-August, and **A. Visnaga Lam.** in damp sandy places, June-September.

#### SIUM L.

**S. angustifolium L.** Stem 1-3 ft. leafy. Leaves large, pinnate, leaflets of root-leaves, sessile, ovate-oblong, serrate, of stem-leaves very irregularly serrate, fewer and smaller. Umbels with few and unequal rays; bracts irregularly cut. Root-stock creeping, stoloniferous, leafing at nodes.

Wet places, ditches, and streams. June-August.

#### PIMPINELLA L.

**P. magna L.** Greater Burnet-Saxifrage. Stem angular, 3-4 ft. high. Leaves all pinnate; leaflets of radical leaves ovate subcordate, of cauline leaves narrower. Larger than **P. Saxifraga**, leaflets broad and membranous and styles longer and more slender. Inner flowers male.

Woods, bushy places, etc. May-July.

**P. Saxifraga L.** Burnet-Saxifrage. Stem terete, 1-3 ft. slender, furrowed. Root-leaves pinnate, leaflets suborbicular, stem-leaves 2-pinnate. Umbels flat-topped. Fruit glabrous, broadly ovoid.

Rocky places and dry hill-sides. June-August.

**P. peregrina L.** Biennial, 2-3 ft. high. Stem solid, furrowed, leafy, branched. Lower leaves pinnatisect, with 5-9 orbicular cordate segments. Umbels 10-30 rayed. Fruit small, hispid with spreading hairs. Flowers white.

Grassy places and shady hills. May-July.

**P. Tragium Vill.** differs from the last by its oval leaf segments, its umbels 6-10 rayed, fruits white tomentose, and shorter, shrubby stems.

Rocky slopes in the lower mountains, rare. June-July. Near Montrieux (Var) and between Levens and la Tour.

#### CONOPODIUM DC.

**C. denudatum Koch.** Plant glabrous, 1-2 ft. high, springing from a rounded "bulb". Stem slender, naked and sinuous below, simple or slightly branched at top. Leaves 2-3 pinnatisect with very narrow linear segments, the lower ones being linear-lanceolate. Umbels 8-12 rayed. Involucre 0 or of 1-2 bracts. Partial involucre of 2-5 linear bracteoles. Flowers white. Fruit ovoid-oblong, attenuated above, compressed, without beak, glabrous, black when ripe.

Woods and borders of fields, especially in the hilly district of the Var. Rare in Alpes-Marit. May-July.

#### CRITHMUM L.

**C. maritimum L.** Sea Samphire. Plant fleshy, glabrous, much branched, woody at base. Leaves 3-nately compound, segments entire, few, terete,



subulate or subfusiform. Petiole short; sheathes long, adnate, membranous. Umbels flat-topped, peduncle stout, fleshy. Bracts and bracteoles acute, spreading. Flowers small, greenish-white.

Maritime rocks, sands, and banks, very common. July-September.

### CENANTHE L.

**C. pimpinelloides L.** Plant 1-2 ft. high, erect. Roots fibrous, with round or ovoid tubers. Leaves 2-pinnate, segments broad, short, entire or acutely cut. Umbels 6-12 rayed; bracts 1-8; partial umbels crowded, bracteoles subulate. Flowers cream coloured. Fruit cylindrical, grooved and ribbed.

Damp meadows, borders of streams, etc. May-July.

**C. Lachenalii Gmel.** Root fibres usually cylindrical. Leaves 2-pinnate, segments obtusely lobed. Resembling the last but taller, root fibres never tuberous, and partial umbels not crowded, styles shorter and slender. Fruit broader, round at top. Flowers white.

Meadows and damp places, rare. June-July.

**C. media Griseb.** Root fibres usually fusiform; stem robust, 2½ ft. high, hollow. Leaves 2-pinnate, with segments cut into narrow acute lobes. Umbels rather large, 5-10 rays, thickening later. Fruit subtetragonous, almost truncate.

Damp meadows and borders of streams, rare. June-July.

**C. fistulosa L.** Leaves pinnate, long petioled. Stem and petioles terete, swollen, hollow. Stem 2-3 ft., stoloniferous. Rays short, few partial umbels, spherical in fruit. Fruit oboval, subtetragonous. Styles as long as the fruit.

Ditches and wet marshes. May-July.

**C. globulosa L.** Lower leaves 2-pinnate, with oval wedge-shaped segments; upper ones with linear segments. Stems thick, hollow, without stolons. Umbels 5-6 rayed, of which 2 or 3 short and thick ones come to maturity. Partial umbels globular when ripe. Fruit globular pear-shaped. Styles shorter.

Ditches and damp meadows, rather rare. May-June.

### FERULA L.

**F. communis L.** Plant 3-6 ft. high, robust, glabrous, strongly scented when dried. Stem very thick, hollow. Leaves soft, green on both sides, cut into very narrow linear segments, the lower ones with a cylindrical petiole, the upper with a large membranous sheath. Central umbel large, 20-40 rayed, the lateral long peduncled. No involucre. Flowers yellow. Fruit oval or elliptical, rounded at each end.

Hill-sides and old walls. May-July.

**F. glauca L.** A sub-species of the last, with stiff rather fleshy leaves, green and shining above, very glaucous beneath, segments broader, fruit narrower, of a glaucous plum colour.

Rocks and stony places, local. May-June.

**F. Ferrulago L.** Plant 1-2 ft. high, green and glabrous. Stem angular, with whorled upper branches. Leaflets narrow-linear, the lower ones with a triangular petiole, the upper sessile on a short sheath. Central umbel 5-10 rayed, slightly shorter than the lateral. Involucral bracts reflexed, oblong, edged with white. Involucel with spreading lanceolate bracteoles. Fruit oblong with narrow base.

Stony slopes and waste places. June-August. Rather rare.

### OPOPONAX K.

**O. Chironium K.** Plant 2-3 ft. high, hispid below, glabrous above. Leaves rather thick, pinnatisect or bipinnatisect, with broad segments obliquely ovate-cordate, serrate, the upper leaves almost reduced to a sheath. Flowers yellow, in whorled umbels at the top of the stems, forming a large panicle. Both involucre with several bracts. Fruit oval, glabrous.

Dry slopes, woods, and waste ground. June-July.

## TORDYLIUM L.

**T. maximum** L. Annual, 1-2½ ft., hispid with scabrous hairs. Hairs on stem reflexed. Leaves pinnatisect, scabrous, the lower ones with 5-7 oblong segments, crenate, the upper and middle ones with long lanceolate terminal segment, dentate. Umbels compact, with 5-10 short hispid unequal rays. Outer flowers with 3 spreading petals, the 2 lateral with unequal lobes. Fruit suborbicular on a short stem.

Borders of fields and waste places, fairly common. June-July.

## PEUCEDANUM L.

**P. officinale** L. Plant 2-3 ft. high, glabrous, dark green. Lower leaves large, stiff, with cylindrical petiole, triternate, with long narrow linear segments. Flowers yellow. Umbels 12-20 rayed, large terminal. Involucre of 2-3 falling bracts or o. Involucel of numerous linear bracteoles. Fruit large, obovate.

Damp woods in the hills, meadows near the sea, etc., occasional. June-September.

**P. Cervaria** Lap. Glabrous, about 3 ft. high. Stem robust, solid. Leaves glaucous beneath, stiff, 2-3 pinnate, segments oval or elliptic-lanceolate, lobed and toothed, the teeth spinescent. Flowers white or pinkish, in 15-25 rayed umbels. Both involucre with reflexed segments, linear and membranous at edges. Fruit oval, entire at summit.

Mountain slopes and woods, descending to near the sea. July-October.

**P. Oreoselinum** Mæneh. Plant 2-3 ft. glabrous, green. Leaves green on both sides, tripinnatisect, with oval segments toothed and trifid at the top. Umbels of 10-20 rays. Involucre and involucel of linear-deflexed bracts. Fruit suborbicular, emarginate, with thick white border. Flowers white.

Woods and pastures, especially in the lower mountains, scarce. July-August.

**P. Venutum** K. Plant 3 ft. high, glabrous, dull green. Leaves large, tripinnatisect with pinnatifid divisions, divided into lanceolate segments. Umbel of 6-15 rays. Both involucre of several spreading bracts. Fruit narrowly oval, downy.

Damp woods near Menton, Nice, Sospel, etc., in Alpes-Marit. August-October.

## DAUCUS L. CARROT.

**D. Carota** L. Biennial, 1-2½ ft. high. Leaves soft, 3-pinnate, leaflets ovate, cut into many narrow segments. Flowers white or pinkish, outer ones rayed, the central ones purplish. Umbels large, 20-40 rayed, outer ones arching over the inner, or few and irregular; bracts usually pinnatifid; bracteoles lanceolate-acuminate. Very polymorphic.

Fields and slopes, very common. April-October.

**D. gummifer** Lamk. Biennial 4-12 in. high, dark green and rather fleshy. Stem thick, branches spreading from the base. Leaf segments broader, closer, umbels convex, spines of fruit dilated and connate at base.

A sub-species of the last growing on rocks, etc., near the sea. June-August.

Rouy calls the typical wild carrot **D. communis**, and **D. Carota** and **D. gummifer** sub-species. **D. mauritanicus** L., **D. maximus** Desf., **D. Bocconei** Guss., and **D. Gingidium** L. are other sub-species found on the littoral.

## CAUCALIS Hoffm.

**C. leptophylla** L. Annual, a foot high; stems covered with appressed hairs. Leaves small, bipinnatisect. Flowers white or pinkish, small, on shortly peduncled umbels, 2-5 rayed. Fruit small, linear oblong, covered with slender hooked bristles.

Fields and arid places, fairly common. May-July.

**ORLAYA Hoffm.**

**O. grandiflora Hoffm.** (Plate XVI). Annual, a foot high, glabrescent. Lower leaves petioled, tripinnatisect, with linear-lanceolate lobes, the upper ones sessile on a membranous sheath. Flowers white, outer ones very much larger; petals deeply bifid. Umbels of 5-8 almost equal rays. Involucre of 5-8 lanceolate-acuminate bracts, white scarious at margin. Fruit ovoid, 8 mm. long, covered with white bristles.

Fields and waste ground on limestone and clay. June-September.

**O. platycarpus K.** sometimes occurs in fields and vineyards. April-July.

**LASERPITIUM L.**

**L. latifolium L.** Plant 2-3 ft. high, usually glabrous and rather glaucous. Leaves 2-3-pinnate, segments subcordate, obtuse, toothed or serrated. Upper leaves sessile on an inflated sheath. Umbels very large, 25-50 rayed. Flowers white. Involucre of several linear glabrous, deflexed, persistent bracts. Fruit oval, with equal ribs.

Mountain woods and rocks. July-August.

**L. Siler L.** Plant 1-3 ft., very glabrous and glaucous. Leaves 2-3 pinnate, segments lanceolate, entire, with pellucid veins. Umbels large, 20-40 rayed; involucre bracts linear, glabrous, persistent. Flowers white or pinkish. Fruit narrow-oblong, glabrous and shining, scented, with narrow wings.

Mountain woods and rocks. June-August.

**L. gallicum L.** Plant 1-2½ ft., green and shining, usually glabrous. Lower leaves very large, on cylindrical petiole, 4-5-pinnatisect, rather thick segments and lanceolate lobes. Upper leaves sessile on a sheath. Flowers white or rosy. Umbels large, 20-50 rayed. Involucre bracts linear-lanceolate deflexed. Fruit oblong, truncate at both ends, glabrous, winged.

Rocks and arid hills. June-August.

**THAPSIA L.**

**T. villosa L.** Plant 2-3 ft., hairy. Stem stout, glabrous. Leaves large, close together, hairy both sides, 2-3-pinnatisect, with large oval pinnatifid segments. Flowers yellow, hermaphrodite, central umbel large, 12-25 rayed. No involucre.

Dry hill-sides, mountains, and woods, local. May-June. Esterel, Mont Coudon, Forêt du Maures, etc.

The following Umbellifers also occur in the district:—

**Hydrocotyle vulgaris L.** (Marsh Pennywort), very rare near Toulon; **Sanicula europæa L.** (Wood Sanicle), in woods in the hills; **Falcaria vulgaris Bernh.** rare; **Ægopodium Podagraria L.** (Goutweed), occasionally in the mountains; **Cachrys lævigata Lam.** very rare in the Var; **Scandix Pecten-Veneris L.**, **S. australis L.**, **Anthriscus vulgaris Pers.**, **A. silvestris Hoffm.**, **A. Candollei Rouy** at Ampus; **Chærophyllum temulum L.**, **C. aureum L.** in the mountains; **Cnidium aploides Spreng.**; **Seseli saxifragum L.**,<sup>1</sup> **S. montanum L.**, **S. elatum L.**, **S. carvifolium Vill.**, **S. tortuosum L.**; **Feniculum officinale All.** (Fennel), **F. piperitum DC.** at Toulon and Hyères; **Coriandrum sativum L.** casual; **Æthusa Cynapium L.** in crops in the montane region; **Angelica sylvestris L.** in the mountains; **Heracleum Sphondylium L.**, **Pastinaca sativa L.** (Wild Parsnip), **P. silvestris Mill.**, **P. urens Godr.**, **Caucalis daucoides L.**, **Torilis anthriscus Gmel.**, **T. infesta Hoffm.**, **T. heterophylla Guss.**, **T. nodosa Gaertn.**, etc.

**ARALIACEÆ.****HEDERA L.** Ivy.

**H. Helix L.** The Ivy is common in woods and on rocks, old walls and trees. It flowers from September-October, and the fruits are ripe in spring.

<sup>1</sup> Now usually called **Ptychotis heterophylla K.**



## CORNACEÆ.

## CORNUS L.

**C. sanguinea L.** Dogwood. Shrub 6-8 ft. high, with leaves and branchlets dark red in autumn. Leaves petioled, ovate-oblong; acute, appearing before the flowers. Cymes terminal, peduncled, corymbose. Flowers small, creamy-white. Berry small, black, globular.

Woods and hedges, common. May-July.

**C. mas L.** Shrub or small tree, 6-15 ft. high, much branched. Leaves ovate acuminate, shortly petioled, appearing after the flowers. Flowers yellow, in small, simple, subsessile, opposite umbels, with an involucre of 4 oval, obtuse, concave bracts. Berry oblong, red, acid.

Woods and hedges on limestone. March-April.

## Division II. MONOPETALÆ or GAMOPETALÆ.

## CAPRIFOLIACEÆ.

Tribe I. SAMBUCEÆ. Corolla usually rotate, regular. Ovary cells 1-ovuled; style short, 2-3 partite, or stigma sessile.

Shrubs. Leaves simple ..... VIBURNUM.

Herbs, shrubs, or trees. Leaves pinnate ..... SAMBUCUS.

Herbs. Leaves 3-nately compound ..... ADOXA.

Tribe II. LONICEREÆ. Corolla tubular or campanulate. Ovary 2-3 celled, with several ovules; style slender ..... LONICERA.

## VIBURNUM L.

**V. Lantana L.** Wayfaring-tree. Shrub 4-8 ft., tomentose. Leaves broadly oblong-cordate, rugose, serrulate; pubescence stellate. Corymbs flat topped, rays stout. Flowers  $\frac{1}{2}$  in. diameter, creamy-white, all fertile. Drupe flattened, black when ripe.

Woods and hedges, especially in the lower mountains. April-May.

**V. Tinus L.** Laurustinus. Shrub, dark green, 3-8 ft. Leaves entire, ovate-acute, persistent, shining above, rather leathery, glandular hairy beneath at the axils of the secondary nerves; petiole short, without stipules. Flowers white, or rose in bud, in dense flat-topped corymbs. Berries, small, subglobular, black when ripe. The leaves often appear larger, less leathery, and more acute than in English gardens. Sometimes they are attacked by an insect and turn silvery-grey like those of myrtle and *Arbutus*.

Woods and hedges, especially on limestone. February-May.

## SAMBUCUS L.

**S. Ebulus L.** Dwarf Elder. Small shrub about 3 ft. high, nearly glabrous. Stems herbaceous, annual, robust, full of white pith. Leaves with 3-5 pairs of oblong-lanceolate, serrate leaflets. Stipules leafy, serrate. Corolla broadly campanulate, white tipped with pink; flowers in 3-rayed corymbose compact cymes. Berry small, globose, black.

Borders of streams and roads. May-July.

**S. nigra L.** (Common Elder) grows in the woods and hedges, and **S. racemosa L.** in mountain woods of the Margès and Maritime Alps.

## ADOXA L.

**A. Moschatellina L.** Moschatel. Small green glabrous succulent herb, 3-6 in. high. Leaflets broadly triangular-ovate; leaflets irregularly 3-lobed, petiole slender, dilated at base. Flowers small, yellowish-green, in a 5-flowered peduncled terminal head, 4-sided, 5-merous. Odour musky. Fruit succulent, green.

Damp, shady places in the mountains, very rare in the south. March-April. Found by the author as high as 6000 ft. in the Maritime Alps of Tenda.

## LONICERA L. HONEYSUCKLE.

**L. implexa** Ait. (Plate XVI). Under-shrub 3-6 ft., with woody tortuous stem and glabrous young branches. Leaves persistent, very leathery, oval-elliptic, the upper ones broadly connate or perfoliate. Flowers terminal, in sessile heads, yellowish-white, red outside, sweet scented, sessile. Berry red.

Woods, hill-sides, and hedges on the littoral. April-June.

**L. Etrusca Santi**. A similar sized shrub with very obtuse deciduous leaves, the upper ones connate. Flowers yellowish-white, red outside, scented, sessile, in long peduncled heads. Berry ovoid, red.

Hedges, woods, and rocky places, extending into the mountains. May-June.

**L. Xylosteum** L. An erect shrub 3-6 ft. high. Leaves petioled. Flowers axillary, in pairs, yellowish-white. Twin berries united at the base, small, globular, red. Leaves downy, especially beneath.

Mountain woods. May-June.

**L. nigra** L. and **L. alpigena** L. are found only in the sub-Alpine region of the Maritime Alps. The former has a twin pair of very small black berries united at the base; and the latter a pair of large red orbicular berries coalescing into one.

## RUBIACEÆ.

Calyx-limb entire or obsolete.

Corolla rotate or bell-shaped, 5-lobed. Fruit fleshy.....RUBIA.

Corolla rotate, 4-lobed. Fruit dry .....GALIUM.

Corolla bell-shaped, or tubular. Fruit dry .....ASPERULA.

Corolla rotate, 3-4 lobed. Fruit dry, prickly .....VAILLANTIA.

Calyx-limb 0, replaced by 3 imbricate bracts. Corolla funnel-shaped, 4-5 lobed .....CRUCIANELLA.

Calyx-limb 6-toothed. Corolla funnel-shaped. Fruit dry .....SHERARDIA.

## RUBIA L.

**R. peregrina** L. Madder. An evergreen, shining climber, glabrous except for the recurved prickles on the stem, midrib and margins of leaves. Leaves persistent, 4-6 in a whorl, lanceolate, or ovate-oblong. Cymes paniced, longer than the leaves. Flowers very small, yellowish. Fruit small, black, globose, 1-celled. Plant somewhat variable.

Hedges and dry stony places, common. May-July.

**R. tinctorum** L. is occasionally seen as a relic of cultivation near Hyères and Toulon. Its leaves are annual, lanceolate, and its flowers a brighter yellow.

## GALIUM L. BEDSTRAW.

(i) *Leaves 3-nerved, usually obtuse, in whorls of 4.*

**G. Crucjata** Scop. Cross-wort. Leaves oval-elliptic, hairy. Stems 6-18 in., erect, slender, very leafy. Cymes axillary, few flowered. Flowers yellow, outer male.

Borders of fields, hedges, and woods, not common in the south. April-June.

**G. pedemontana** All. Annual, with yellowish-green stem, slender, scabrous, covered with spreading hairs and little reflexed needles. Leaves elliptic, obtuse, feebly 3-nerved, usually deflexed, much shorter than internodes. Flowers yellow, in small axillary heads. Fruit almost glabrous.

Thickets in the mountains of the Var, rare. May-July.

**G. vernum** Scop. Leaves oval or oblong, obtuse, glabrous or pubescent, clearly 3-nerved. Flowers yellow, in small axillary cymes, corolla lobes acuminate, peduncles without bracts. Fruit glabrous and shining.

Woods and shady places in the Maritime Alps. April-June.

**G. boreale** L. and **G. rotundifolium** L. occur above our limit in the Maritime Alps.

(ii) *Leaves 1-nerved, usually mucronate or cuspidate.*

\* *Stems usually rough with reflexed hairs; root-stock slender.*

**G. saccharatum** All. Annual. Stems diffuse, slightly scabrous. Leaves in whorls of 5-6, linear-lanceolate, shortly mucronate, glabrous above, hispid at margin. Flowers whitish, in little axillary 3-flowered cymes, the 2 lateral male. Fruit often solitary, very large, greenish-white, covered with whitish conical warts which give the plant a distinct aspect.

Fields and vineyards. Not very common. February-May.

**G. tricornne** With. Corn Galium. Annual. Leaves in whorls of 6-8, longer than the last, very scabrous at the edges. Fruit large (4.5 mm.) covered with little green tubercles without hooks or bristles.

Fields and crops. Very common. April-July.

**G. minutulum** Jord. A very delicate small annual, with filiform erect stems; leaves in distant whorls of 4, spreading, oval-elliptic, mucronate. Flowers dirty white, 1 or 2 in the axils of the leaves. Fruit minute, obóvate, covered with white hooked bristles. Another very distinct species.

Sandy places on the Islands of Porquerolles, and Levant, near Bormes, etc. Very rare. May-June. Not yet found except in a few places in the S. of France.

**G. murale** All. Wall Galium. Very small annual, but less slender and capillary than the last, and with the whorls of 4-6 leaves nearer together, oblong-lanceolate, mucronate, scabrous. Flowers yellowish, 2-3 together in the axils. Fruit pendent, linear oblong, covered with hooked bristles.

Sandy places, under walls, etc., common. March-May.

**G. verticillatum** Danth. Annual, 3-8 in. high. Stems erect, slightly scabrous. Leaves in whorls of 4-6, reflexed and finally appressed against the stem, lanceolate, acute, with scabrous borders. Flowers yellowish, very minute, 3-7 in the leaf axils; pedicels very short, 1-flowered. Fruit erect, sitting on the whorls, ovoid, and hispid with white simple hairs.

Arid, stony places in the hills. April-June. Rather rare.

**G. parislense** L. Annual, very polymorphic. Stem very slender, much branched, scabrous. Leaves in whorls of 6, soon reflexed, linear-lanceolate, mucronate, scabrous. Flowers reddish-green, minute, in a long panicle, extending throughout the stem. Fruit minute, glabrous, finely tubercled.

Dry, sandy places. May-July.

On the littoral the two sub-species **G. divaricatum** Lamk. (more branched and divaricate) and **G. anglicum** Huds. are equally common, and **G. tenellum** Jord. is less so. The last has broadly lanceolate leaves.

**G. setaceum** Lamk. A small, slender annual, 2-8 in. high. Leaves linear-setaceous, erect spreading, in whorls of 6-9. Flowers very minute, reddish, in a large panicle almost exceeded by a long leaf-like bract. Fruit covered with long white spreading hairs.

Dry, sandy, and rocky places, uncommon. May-June. Mont Faron, top of Mont Paradis near Carqueiranne (determ. J. Briquet), etc., in the Var; and near Grasse.

**G. aparine** L. (Cleavers) very variable, and **G. palustre** L. also occur frequently.

\*\* *Stems glabrous or hairy, but with no reflexed hairs; plants perennial, often with thick root-stock.*

**G. purpureum** L. Plant 1½ ft. high, almost glabrous, always green, with woody stock. Stems stiff, erect, much branched. Leaves in whorls of 8-10, narrow linear, mucronate. Flowers purple-red in a long narrow pyramidal panicle, with slender branches. Pedicels capillary. Fruit rugose, minute.

Rocky, stony places, local. June-August.



**G. rubrum** *L.* Plant 1½ ft. high, green, and not turning black on drying, with more slender stock and stems. Leaves in whorls of 6-12 (usually 8), linear-lanceolate, mucronate, with prominent dorsal nerve. Flowers dark red, pinkish, or greenish-white, numerous, in a diffuse, spreading panicle. Corolla lobes apiculate. Fruit glabrous.

Dry woods and hill-sides in the Maritime Alps. June-July.

Represented in the Var by the sub-species **G. obliquum** *Vill.* which has many varieties found in the district. It is a smaller plant, more glabrous at the base, with flowers usually yellowish-white.

**G. Mollugo** *L.* Hedge Bedstraw. Perhaps the commonest sub-species of this variable plant is **G. elatum** *Thuill.* Branches short and spreading; leaves obovate or oblong-lanceolate, in whorls of 6-8, somewhat transparent, mucronate. **G. erectum** *Huds.* is a stronger, stiffer plant, leaves narrower, lanceolate or linear-lanceolate, not transparent, more mucronate and with distinct midrib; branches of panicle more upright; pedicels less divaricate (Bicknell). Other sub-species are **G. Gerardi** *Vill.*, and according to Rouy, Albert, and Jahandiez **G. corrudæfolium** *Vill.* and **G. cinereum** *All.* (ashy-grey and glaucous). But these are considered distinct species by most authorities, and we prefer to treat them as such.

They grow in dry and often stony places whereas the true **G. Mollugo** and **G. elatum** are found in hedges and by streams (May-September). **G. erectum** is a limestone plant.

**G. corrudæfolium** *Vill.* = **G. lucidum** *All.* A stiff plant, somewhat woody at the base; leaves narrow and shining, in whorls of 6-8, with strongly marked midrib. Pedicels short, erect. Flowers yellowish-white, in a narrow panicle.

Arid places on the littoral and lower mountains. May-June.

**G. cinereum** *All.* A very glaucous, ash-grey plant, much resembling **Asperula galioides**, with perfectly smooth stem, and large spreading panicles of pure white flowers.

Arid hill-sides, borders of woods, etc., especially in the lower mountains. June-July.

**G. verum** *L.* Yellow Bedstraw. Leaves narrow-linear, in whorls of 8-12, stem erect or spreading 1-2 ft. high. Flowers bright yellow, sweet scented, numerous, in a long narrow panicle. Fruit small, glabrous and smooth.

Borders of fields and grassy places, common from sea-level to the mountains and very variable. April-September.

**G. aristatum** *L.* A close ally of **G. silvaticum** *L.* Leaves linear-lanceolate, large, glabrous and glaucous, in whorls of 6-8. Flowers rather large, pure white. Fruit glabrous.

Mountain woods. June-August.

**G. Jordani** *Loret et Barr.* and **G. umbellatum** *Lamk.*, both very variable and considered by Rouy sub-species of his **G. commune** = **G. silvestre** *Poll.*, occur on the littoral. **G. pusillum** *L.* grows in the mountains but descends considerably in the south. It is a small green shining plant, densely tufted, with rather rigid stems and short internodes. Leaves in whorls of 6 or 7, linear, aristate, with marked dorsal nerve. Flowers white, in short corymbs.

#### ASPERULA *L.*

**A. arvensis.** *L.* Annual, a foot high. Lower leaves in whorls of 4, obovate, the others in whorls of 6-8, linear obtuse. Flowers blue, small, in terminal heads with long ciliate bracts.

Cultivated places. April-June.

**A. taurina** *L.* Plant a foot high, robust. Leaves in whorls of 4, large, elliptic lanceolate, acuminate. Flowers white, large, scented, in terminal heads, with an involucre of leafy bracts.

Mountain woods in the Maritime Alps, local. April-May.

**A. lævigata** L. Plant 1½ ft. high, glabrous. Leaves oval or oblong obtuse, 1-nerved, in whorls of 4. Flowers white, very small, in axillary cymes. Woods and shady places, uncommon. May-June.

**A. galioides** M. Bieb. = **A. glauca** Bess. = **Galium glaucum** L. Plant 1-2 ft. high, glabrous. Stem robust, rigid, swollen at nodes. Leaves in whorls of 6-8, linear, stiff, mucronate, almost glaucous. Flowers pure white. Fruit glabrous and glossy. Resembles **G. cinereum**.

Dry, stony slopes, rather rare. May-July.

**A. cynanchica** L. Squinancy-wort. Barren stems nearly prostrate, the others about 6 or 8 in. high. Leaves narrow-linear, lower ones in whorls of 4, upper ones often in pairs. Flowers pinkish-white or white, funnel-shaped. Fruit small, tubercular. A very variable plant.

Dry woods and hill-sides, especially on limestone. June-September.

**A. longiflora** W. et K. This is as variable as the last, and differs from it in its longer corolla-tube, more spreading lobes and longer leaves; and it is usually a taller plant.

Rocks in the Esterel and lower Maritime Alps. June-July.

**A. hexaphylla** All. A small tufted species, glabrous, with leaves in whorls of 6, rather short, linear. Stem branched. Flowers pink, in dense terminal heads, with involucre of small bracts. Corolla-tube 3 times as long as limb, Fruit glabrous.

Sunny rocks, usually limestone, in the lower mountain region about St. Dalmazzo di Tenda, above Menton, etc. Rare. June-July.

**Sherardia arvensis** L. is common in cultivated and waste places, also in sandy pine-woods, etc. It is a small hispid annual with about 6 leaves in a whorl and minute lilac or pink flowers. April-June.

#### CRUCIANELLA L.

**C. maritima** L. (Plate XVI). Plant glabrous and glaucous, 6-18 in. long, with woody root and robust stems. Leaves in whorls of 4, erect, imbricate at the base and on the young branches, lanceolate, mucronate, coriaceous, with white membranous margin. Flowers small, yellowish in dense spikes. Corolla-tube very long.

Sea sands, very local. May-July.

**C. latifolia** L. Annual, 6-16 in. high, glabrous. Stems slender, scabrous. Upper leaves linear-lanceolate in distant whorls of 6, spreading, flat, green, scabrous; lower leaves broader. Flowers very small in a long dense imbricate spike. Outer bracts connate, ciliate.

Dry slopes and stony fields. April-June. Rarer than the next.

**C. angustifolia**. Annual, 6-12 in. high, glabrous. Stems slender, erect. Leaves in whorls of 4-6, linear-setaceous, very scabrous, margin rolled in, appressed against the stem. Flowers very small, yellowish, in linear, quadrangular, densely imbricate spikes. Outer bracts white, with green keel.

Dry slopes and stony places on the littoral. May-July.

#### VALERIANACEÆ.

Calyx pappose. Corolla-tube spurred. Stamen 1.....CENTRANTHUS,

Calyx pappose. Corolla-tube slightly swollen or gibbous. Stamens 3.....

VALERIANA.

Calyx toothed or lobed. Corolla-tube obconic. Annuals .....VALERIANELLA.

#### CENTRANTHUS DC.

**C. ruber** DC. Red Spur-Valerian. Stem woody below; branches 2-3 ft. erect, terete, hollow. Lower leaves lanceolate, upper ones triangular ovate entire, glabrous and rather glaucous. Cymes long; flowers dense, red or sometimes white; corolla ½ in., spur slender, twice length of ovary. Fruit glabrous.

Rocks, walls, railway and other dry banks, etc., common. March-July, and indeed almost all the year in certain places. In places this plant grows in great quantity, and forms brilliant masses of colour.

**C. Calcitrapa DC.** Annual, glabrous, green or reddish; stem slender, 6-18 in. Leaves pinnatifid, lower ones entire or lyrate. Corolla slightly gibbous, hardly spurred. Flowers rose, in small unilateral and then divaricate panicles. Fruit glabrous or hispid.

Dry stony places, rocks, and slopes. May, June.

**C. angustifolius DC.**, with linear entire leaves, grows in the lower Maritime Alps on sunny slopes of débris. June-July.

#### VALERIANA L. VALERIAN.

**V. officinalis L.** Common Valerian. Plant glabrous, 2½-4 ft. high. Lower leaves pinnatisect, with 15-21 lanceolate, almost equal segments. Flowers pale pink, hermaphrodite, uniform in shape, in large corymbs.

Shady places in the lower Maritime Alps. June-August.

**V. tuberosa L.** Tuberous Valerian. Plant glabrous, with thick tuberous root, and no stolons, 6-12 in. high. Lower leaves oboval or elliptic, obtuse, entire, petioled; stem-leaves subsessile, pinnatisect, with 5-9 segments, the terminal the largest. Flowers pink, polygamous, in short, contracted corymbs.

Rocks and shady places in the hills. April-June.

**V. tripteris L.** with greyish coarsely toothed leaves, and **V. montana L.** with bright green, shining leaves, grow in shady or damp places in the Maritime Alps, the former being common in the mountain woods.

#### VALERIANELLA L. (all annual weeds).

**V. echinata DC.** Plant 6-12 in. high, glabrous. Leaves sinuate-toothed or incised. Limb of calyx formed of 3 conical horns, unequal, arched outwards. Flowers very small, pink. The fruit of 2 kinds, linear and straight, and the upper ones oblong, with 3 obtuse angles.

Stony fields. April-June.

**V. oleriora Poll.** Lamb's Lettuce. Fruit almost orbicular in outline, rather broader than long, with a longitudinal furrow and 2 ribs on either side, the bract swollen and spongy. Flowers very small, bluish; upper leaves usually entire.

Cultivated ground. March-May.

**V. eriocarpa Desv.** Limb of calyx as long as fruit, obliquely truncate with 5-7 large teeth; fruit with a rib on each side, and on the face an oval depression enclosed by 2 prominent ribs and divided by a nerve. Stems stiff, rather thick.

Cultivated ground. April-June.

**V. truncata Belcke.** Differs from the last in the limb of calyx being as long as the fruit, and much more obliquely truncate and scarcely toothed.

Cultivated ground and dry gravelly places in the littoral and lower mountain regions of Alpes-Marit. and Liguria. May. Rare in the Var.

**V. Morisonii DC. = V. dentata Poll.** Bracts scarcely as long as ripe fruit; limb of calyx small, much shorter than fruit, obliquely truncate and acute. Fruit with a narrow longitudinal rib on back and each side.

Cornfields, etc. May-June. Less common in the Var than the sub-species **V. microcarpa Lois.**, the fruit of which has finely ciliate borders, limb of calyx acute and the fruit has curved hairs. May-June.

**V. carinata Lois.** Keeled Corn-salad. Fruit oblong, somewhat 4-sided, with prominent rib on back ending in a short tooth, and face divided by deep longitudinal furrow.

Fields and uncultivated ground. April-June.

**V. coronata DC.** Fruit crowned by large limb of calyx which is glabrous, reticulated and divided into 6 triangular lobes ending in a hooked awn.

Cultivated or waste ground. April-July.



**V. discoidea** *Lois.* Differs from the last in being more branched and thick set, with broader, more hairy and more pinnatifid leaves, the limb of calyx has lobes more outspread, of ten bifid and hairy on both sides and more shortly hooked. Fields and waste places. April-June.

I am indebted to Mr. Bicknell for many of the above distinctions.

**V. rimosa** *Bast.*, **V. membranacea** *Lois.*, and possibly one or two other species occur in the district.

## DIPSACEÆ

Floral bracts spinescent, exserted, covering the head ..... **DIPSACUS.**

Floral bracts simple, rigid. Involucre leathery ..... **CEPHALARIA.**

Floral bracts hispid. Calyx crowned by bristles (6-10). Involucel 4-furrowed. **KNAUTIA.**

Floral bracts concealed, scale-like or o. Involucel 8-furrowed ..... **SCABIOSA.**

DIPSACUS *L.*

**D. silvestris** *Mill.*, the Common Teasel, is found here and there at the sides of ditches, etc., and **D. pilosus** *L.* in the mountain region of Alpes-Marit.

**D. fullonum** *Mill.* is still occasionally cultivated in the Var.

CEPHALARIA *Schrad.*

**C. leucantha** *Schrad.* A bushy plant about a yard high. Root-leaves simple, oval, toothed. Stem-leaves pinnatisect, with toothed lanceolate or linear segments, glabrous or sometimes rather viscid and sweet-scented. Flowers yellowish-white, in spherical heads (2 cms.) Involucral bracts and scales of receptacle scarious, ovate, obtuse, and pubescent. Involucel with many teeth and ciliate.

Borders of fields and stony slopes. July-September.

**C. transilvanica** *Schrad.* Annual, 1-2½ ft. Stem slender, more or less scabrous. Leaves hispid, cauline leaves pinnatisect or almost lyrate, with linear-lanceolate segments the terminal being largest. Root-leaves simple. Involucral bracts scarious. Scales of receptacle ovate, acuminate-aristate with a purple keel. Flowers pale blue. Involucel of 8 short teeth.

Dry fields and cultivated ground. July-October.

**C. syriaca** *Schrad.* is very rare, and found in fields at the Grande Axe (Seillens) in the Var. June-July. The scales of the receptacle are broad and have an awn as long as the limb. Leaves simple. Flowers lilac. Annual.

KNAUTIA *Coulter.*

**K. arvensis** *Coult.* = **Scabiosa arvensis** *L.* Field Scabious. Stem 2-4 ft., rather stout, hairy, usually branched above. Leaves variable, hairy, radical, oblong lanceolate, entire, serrate. Heads of pale lilac-purple flowers 1-1½ in. in diameter on long peduncles. Involucral bracts broad, leafy, 2-seriate. Corolla hairy, inner pinker, outer larger, radiating, 2-lipped. Plant polymorphic.

Borders of fields, banks, woods, and meadows. May-September.

**K. hybrida** *Coult.* = **K. integrifolia** *Bert.* Annual, 1-2 ft. Root-leaves in a rosette, lyrate or pinnatifid, upper leaves linear-lanceolate entire. Peduncles glandular. Flowers pale rose or lilac, in nearly flat heads. Calyx crowned with numerous white hairs, shorter than the involucel.

Fields and sandy hill-sides on the littoral. May-June.

**K. sylvatica** *Duby* and **K. collina** *G. G.* grow occasionally in the lower mountain region. The former has large oblong-lanceolate leaves, and the latter has lyrate or pinnate leaves with oblong obtuse lobes, silky or felted.

SCABIOSA *L.*

**S. maritima** *L.* (Plate XVII). Stem erect, 1-3 ft. Lower leaves oblong, spatulate, toothed. Upper ones pinnatisect. Flowers pink or light violet,

on long peduncles. Involucre of many long lanceolate segments. Involucel with a white plaited crown, folded inwardly. Limb of calyx with 5 long reddish hairs. Extremely variable.

Borders of fields and waste ground, very common. June-August, but more or less all the year in sheltered spots.

The var. *atropurpurea* G. G. is occasionally seen on the littoral and at Porquerolles. It is the dark flowered scabious so often cultivated in gardens.

**S. pyrenaica** All. Plant white-tomentose. Stems erect. Root-leaves oval-lanceolate, spatulate, toothed or crenate; upper leaves pinnatisect. Flowers blue lilac. Involucre with linear segments. Involucel with plaited crown. Calyx with 5 hairs, twice length of limb.

Stony places in the hills and mountains from the Maritime Alps down to the coast near Nice, Menton, Ventimiglia, etc. August-November.

**S. hybrida** All. Stem erect, rough. Lower leaves large, lyrate; upper lanceolate, entire. Involucral leaves lanceolate-acuminate. Receptacle covered with white bristly hairs. Involucel crowned with 2-4 teeth. Calyx crowned with short silky hairs. Flower head flat. Flowers pale pink.

Cultivated ground about Cannes, Nice, Menton, Bordighera, etc. May-July.

**S. stellata** L. Annual, 6-18 in. high, hispid. Root-leaves toothed, stem-leaves pinnatisect. Flower heads hemispherical when fruiting (2-3 cm.). Flowers bluish-lilac, with 5 unequal lobes. Involucral leaves entire or incised, longer than the flowers. Crown of involucel yellowish, longer than the tube, with very broad margin. Calyx hairs subulate, rather longer than the crown. The type does not grow in France, but on the littoral we have the sub-species **S. monspeliensis** Jacq. and **S. simplex** Desv. = **S. stellata** Caruel.

Borders of fields and limestone slopes. May-July.

**S. succisa** L. Devil's-bit Scabious. Leaves mostly radical, stalked, ovate or oblong, entire, mostly glabrous. Stems 1-2 ft. high, with 1-5 heads of deep violet-blue flowers on long peduncles. Involucral bracts lanceolate, in 2 or 3 rows, the inner ones gradually passing into the pointed scales of the receptacle. Fruit crowned by the 4 bristles of the calyx. Involucel with 4 ovate teeth.

Damp meadows and grassy places, fairly common. June-September.

**S. gramuntia** L. Plant 1-2½ ft. high, more or less hairy, with spreading branches. Leaves often whitish with down, or pubescent, root-leaves lyrate, pinnatifid, stem-leaves usually bipinnatisect, with almost equidistant pairs of segments. Flowers blue, in small heads on very long peduncles. Fruiting heads small, absolutely globular. A very variable plant.

Dry places. July-October.

**S. graminifolia** L. A small silvery and silky plant with numerous linear, entire leaves forming a tuft from which springs a simple naked stalk with one head of pale violet flowers. Calyx bristles whitish.

Rocky places in the mountains, rare. June-August.

## COMPOSITÆ.

Sub-family I. CORYMBIFERÆ. Central florets hermaphrodite, tubular; outer florets female or sterile, ligulate, or rarely tubular.

Tribe I. EUPATORIÆ. Leaves mostly opposite. Flowers all tubular, 2-sexual. Anther-cells not tailed.

Leaves opposite, of 3-5 lanceolate segments ..... EUPATORIUM.

Leaves alternate, cordate, large. Involucre narrow, of 3-8 segments .....

ADENOSTYLES.

Tribe II. TUSSILAGINÆ. Ray florets female, central ones hermaphrodite.

Style arms of disk florets connate.

Heads racemose; outer florets tubular ..... PETASITES.

Heads solitary; outer florets ligulate ..... TUSSILAGO.



1



2



3



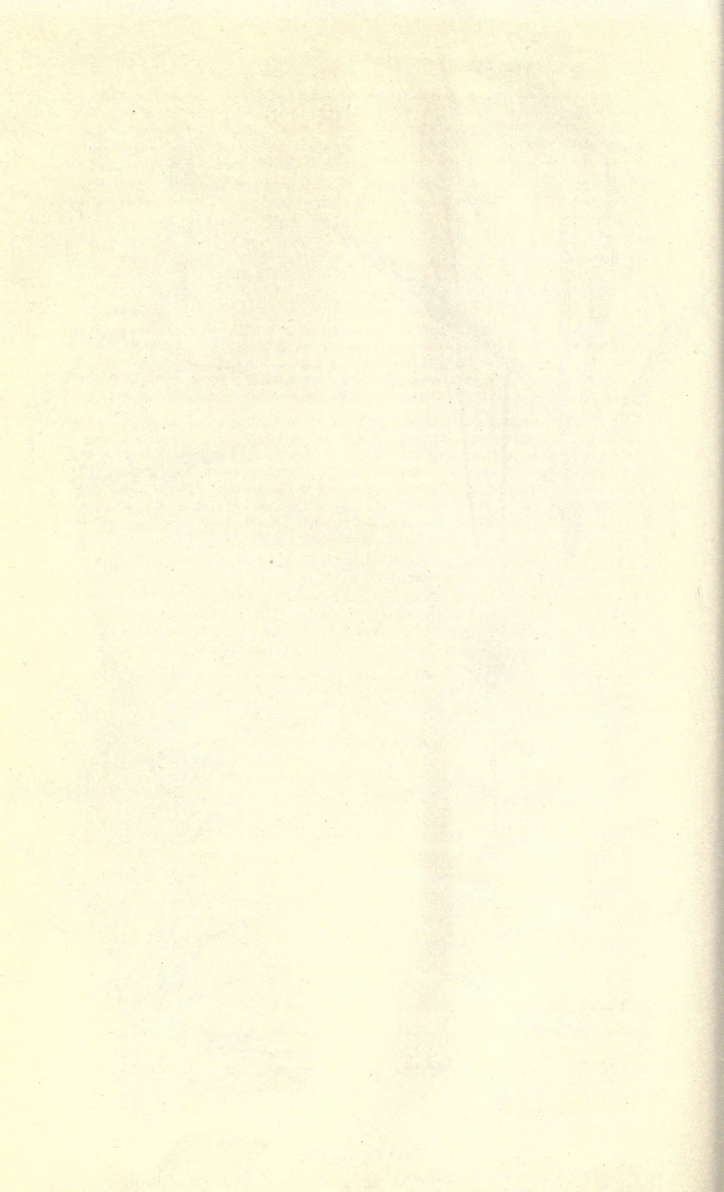
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PLATE XVIII.

1. *Catananche cœrulea*.  
3. *Carlina corymbosa*.

2. *Echinops Ritro*.  
4. *Scolymus hispanicus*.





Tribe III. ASTEROIDEÆ. Leaves alternate. Ray flowers female or neuter, ligulate, rarely all tubular. Disk flowers 2-sexual. Anther-cells not tailed. Pappus hairs or scales rigid or o. Style arms usually flattened.

Ray flowers purple, 1 seriate or o. Pappus rigid.....ASTER.  
 Ray flowers in 2 or more series. Pappus hairs rigid.....ERIGERON.  
 Ray flowers ♀ in 2 series. Involucre campanulate.....BELLIDIATRUM.  
 Ray flowers white or pink in one series. Pappus o.....BELLIS.  
 Ray flowers yellow. Pappus hairs rigid or o.....SOLIDAGO.  
 Ray flowers numerous, filiform, in many rows. Disk flowers few.....CONYZA.

Tribe IV. INULOIDEÆ. Leaves alternate. Ray flowers ligulate, yellow, or o; disk flowers tubular. Anther-cells with slender tails.

Pappus scabrid, simple. Ray flowers ligulate.....INULA.  
 Pappus scabrid, with an outer row of short scales. Ray flowers ligulate.....PULICARIA.  
 Achenes crowned by a membrane. Involucral bracts almost equal.....BUPHTHALMUM.  
 Achenes crowned by a membrane, much compressed. Outer involucral bracts large, spreading and irregular.....ASTERISCUS.

Tribe V. CALENDULEÆ. Involucre hemispherical, with bracts in 2 series. Achenes curved, muricate. Leaves almost entire.....CALENDULA.

Tribe VI. GNAPHALIEÆ. Involucral bracts often scarios. Flowers all tubular. Style arms linear obtuse. Achenes cylindrical or compressed.

Leaf borders rolled in below. Inner involucral bracts acute.....PHAGNALON.  
 Leaf borders rolled in below. Inner involucral bracts obtuse.....HELICHRYSUM.  
 Heads diœcious. Receptacle flat, naked. Pappus silky.....GNAPHALIUM.  
 Heads subdiœcious. Pappus of male clavate silky.....ANTENNARIA.  
 Heads diœcious. Receptacle conical; scales few.....FILAGO.  
 Leaves flat, entire or crenate, whitish. Inner involucral bracts hooded.....MICROPUS.  
 Plants whitish, minute. Involucral bracts all flat.....EVAX.

Tribe VII. ANTHEMIDEÆ. Leaves alternate. Ray flowers ligulate, or tubular and very slender. Anther-cells not tailed. Style arms linear with truncate tips. Pappus o or minute.

Ligule oblong. Fruit terete or angled.....ANTHEMIS.  
 Ligule broad, short. Fruit compressed.....ACHILLEA.  
 Receptacle hemispherical; achenes compressed, with 2 membranous wings.....ANACYCLUS.  
 Flowers all tubular and compressed. Plant white-tomentose.....DIOTIS.  
 Receptacle hemispherical. Heads in a corymb.....PYRETHRUM.  
 Receptacle conic, naked, often elongating.....MATRICARIA.  
 Receptacle flat or convex, naked. Leaves pinnatifid or toothed.....CHRYSANTHEMUM.  
 Receptacle hemispherical. Heads solitary at top of branches.....LEUCANTHEMUM.

Tribe VIII. ARTEMISIEÆ. Flowers all tubular. Receptacle usually naked.

Flowers all tubular. Involucral bracts few seriate. Receptacle narrow.....ARTEMISIA.  
 Flowers all tubular. Involucral bracts many seriate. Receptacle broad.....TANACETUM.  
 Flowers all tubular. Outer ones ♀, tube compressed winged.....SANTOLINA.

Tribe IX. SENECTIONIDEÆ. Leaves alternate. Flowers all yellow, tubular and 2-sexual, or outer ligulate. Receptacle naked. Anther-cells without tails. Pappus hairs usually very soft. Style arms of disk florets free.

**Petasites** and **Tussilago** (often placed here) are removed to a tribe by themselves.

Involucral bracts in many series. Pappus hairs rigid. Leaves mostly entire. **DORONICUM.**

Involucral bracts in one series. Leaves mostly pinnate ..... **SENECIO.**

Sub-family II. **CYNAROCEPHALÆ.** Leaves usually spinous. Involucre often globose, bracts often spinous. Florets all tubular, hermaphrodite, or sometimes the outer female or neuter.

Tribe I. **ECHINOPSEÆ.**

Head 1-flowered, each floret with an involucre and together crowded into a ball ; pappus of bristles ..... **ECHINOPS.**

Tribe II. **CARLINEÆ.** Anther-cells tailed. Florets usually equal.

Anthers with subulate tails. Outer bracts hooked ..... **ARCTIUM.**

Anthers with feathery tails. Outer bracts spinous, inner spreading ..... **CARLINA.**

Outer involucral bracts pinnatifid, inner not spreading ..... **ATRACTYLIS.**

Achenes cylindrical-fusiform. Pappus of 1 row of hairs ..... **STÆHELINA.**

Involucre ovoid, glabrous. Pappus of 5 bristles ..... **XERANTHEMUM.**

Tribe III. **SILYBEÆ.** Bracts spinescent. Filaments connate.

Filaments connate. Fruit terete, rugose ..... **SILYBUM.**

Filaments connate. Pappus hairs plumose. Leaves variegated. **GALACTITES.**

Filaments connate. Pappus hairs toothed. Achenes long, compressed,

tetragonous ..... **TYRIMUUS.**

Tribe IV. **CARDUEÆ.** Bracts spinescent. Filaments free.

Receptacle hispid with long hairs. Flowers blue ..... **CARDUNCCELLUS.**

Filaments free. Fruit not angled. Pappus simple haired ..... **CARDUUS.**

Filaments free, hairy. Fruit not angled. Pappus feathery ..... **CIRSIUM.**

Filaments free. Fruit angled. Pappus feathery, persistent ..... **CNICUS.**

Filaments free. Fruit 4-angled, rugose ..... **ONOPORDON.**

Tribe V. **CENTAURIEÆ.** Anther-cells not tailed. Outer fls. neuter.

Outer bracts often fringed. Pappus short, unequal or 0 ..... **CENTAUREA.**

Achenes hairy, outer ones without pappus. Inner involucral bracts 10, small.

..... **CRUPINA.**

Achenes glabrous. Pappus hairs long. Bracts unarmed ..... **SERRATULA.**

Outer involucral bracts ribbed, spinous at edge, inner with a broad toothed

appendage ..... **CARTHAMUS.**

Sub-family III. **LIGULIFLORÆ** or **CICHORIACEÆ.** Florets all ligulate.

Tribe I. **SCOLYMEÆ.** Seeds invested with the chaff of the receptacle.

Plant spiny. Achenes naked or with 2-4 hairs ..... **SCOLYMUS.**

Tribe II. **HYOSERIDEÆ.** Pappus chaffy. Receptacle naked.

\* *Pappus of small scales.*

Involucre double. Flowers blue ..... **CICHORIUM.**

Involucre simple, of many bracts. Stigmas ovoid. Flowers blue **CATANANCHE.**

Involucral bracts never enveloping the top-shaped achenes. Flowers yellow

..... **TOLPIS.**

Involucral bracts enveloping the ripe achenes. Stem leafy ..... **HEDYNOIS.**

Involucral bracts enveloping the ripe achenes. Stem single, naked ..... **HYOSERIS.**

\*\* *Pappus none.*

Achenes persistent, outer ones spreading, stellate ..... **RHAGADIOLUS.**

Achenes falling, obtuse, not spreading ..... **LAPSANA.**

Tribe III. **HYPOCHÆRIDEÆ.** Pappus hairs feathery, usually dilated at base.

Receptacle chaffy.

Receptacle paleaceous. Pappus hairs often in 2 rows ..... **HYPOCHÆRIS.**

Receptacle chaffy. Involucre with very small basal bracts ..... **SERIOLA.**





PLATE XIX.

1. *Atractylis cancellata*. 2. *Galactites tomentosa*. 3. *Leuzea (Centaurea) conifera*.  
 4. *Crupina Crupinastrum*. 5. *Xanthium strumarium*.



Tribe IV. SCORZONERÆ. Pappus hairs feathery, often dilated at the base.

Receptacle usually naked.

Outer achenes crowned by a membrane. Beak filiform.....THRINICIA.

Achenes contracted at top. Pappus-hairs irregular.....LEONTODON.

Achenes contracted at both ends. Plants hispid.....PICRIS.

Achenes with filiform beak. Involucre double. Plant hispid, leafy  
HELMINTIA.

Achenes compressed. Involucre simple, with 8 connate bracts UROSPERMUM

Achenes not beaked. Leaves linear, entire, glabrous.....SCORZONERA.

Achenes on a hollow support, not beaked. Leaves pinnatifid, glabrous.....  
PODOSPERMUM.

Achenes slender. Involucral bracts reflexed at maturity.....TRAGOPOGON.

Tribe V. CREPIDÆ. Achenes tapering. Pappus hairs not feathery. Receptacle naked.

Central achenes beaked. Stem almost naked, many flowered.....PTEROTHECA.

Central achenes beaked. Stem naked, 1-flowered. Receptacle naked.....  
TARAXACUM.

\* Achenes usually narrowed below and beaked above. Leafy, glabrous or hispid  
herbs.

Achenes rounded, 5-toothed. Stem leafy, many flowered.....CHONDRILLA.

Achenes compressed, long beaked. Stem leafy, many flowered.....LACTUCA.

Achenes subcylindrical, short beaked. Stem leafy, many flowered.....  
BARKHAUSIA.

Achenes truncate, not beaked. Flowers bluish or violet.....PRENANTHES.

Involucre fleshy, adhering to the achenes. Pappus lateral.....ZACINTHA.

Achenes compressed, not beaked. Pappus of soft white hairs.....SONCHUS.

Achenes not beaked, with 4-5 rugose ribs. Pappus of soft white hairs.....  
PICRIDIMUM.

\*\* Achenes subcylindric. Involucre of 2 rows. Pappus of soft white simple  
hairs.....CREPIS.

\*\*\* Achenes truncate, attenuated at base, pappus hairs rough, dirty white.....  
HIERACIUM.

\*\*\*\* Achenes shorter than the many-haired receptacle. Pappus hairs stiff,  
brown.....ANDRYALA

#### Sub-family I. CORYMBIFERÆ.

#### EUPATORIUM L.

**E. cannabinum** L. Hemp Agrimony. Stem 3-4 ft. Leaves opposite, 3-5 foliolate, leaflets lanceolate, serrate. Heads in dense terminal 5-6-flowered corymbs, whitish-pink or pale purple. Involucral bracts about 10, scarious, linear-oblong, obtuse. Pappus white, scabrous. Corollas covered with resinous points. By water-courses and damp places. June-August.

#### ADENOSTYLES Cass.

**A. alpina** Bluff. et Fing. = **A. viridis** Cass., is found in mountain woods in the Chens (Var) and in the Maritime Alps. July-August.

**A. albifrons** Reichb. with cordate-reniform leaves, white cottony beneath, is common in the Maritime Alps, descending the mountain torrents a considerable distance. July-August.

#### PETASITES Adans.

**P. officinalis** Mæsch. Butterbur (**P. ovatus** Hill, 1769). Leaves very large, heart-shaped, whitish pubescent below, long petioled. Involucral bracts very obtuse. Heads of pinkish flowers in an oblong dense panicle, appearing before the leaves.

Damp places, borders of streams, etc., in the upper valleys, rare. March-April.



**P. fragrans** *Presl.* with very pale mauve flowers, smelling of vanilla, and cordate leaves green on both sides, is naturalized in various places and flowers in January-March. **P. albus** *Gaertn.* and **P. niveus** *Baumg.* grow in the Maritime Alps and flower in April-May.

**Tussilago Farfara** (Coltsfoot) is common in clay soil. February-March. The leaves, covered with a loose white cotton, appear long after the yellow flowers.

### ASTER.

**A. Tripolium** *L.* Sea Aster. A fleshy glabrous biennial plant 2-3 ft. high. Leaves lanceolate, very glabrous, root-leaves long petioled. Ray florets pale violet or whitish; flowers in a corymb. Involucral bracts few, oblong, obtuse, appressed. Pappus dirty white.

Salt marshes and other places near the sea. July-October.

**A. acre** *L.* Plant erect, nearly glabrous, 1-2 ft. high, with very leafy stem. Leaves linear, acute, stiff, strongly dotted; lower ones 3-nerved, upper ones 1-nerved. Involucral bracts appressed, outer ones lanceolate, inner ones obtuse. Heads numerous in a compact corymb whose branches are clothed with bracteoles. Ray flowers bright mauve, disk flowers reddish or yellow.

Hill slopes and rocky places, at borders of wood, etc., common. August-November.

**A. Amellus** *L.* A beautiful plant, as is the last, about 2 ft. high, with larger bluish-mauve heads of flowers, and entire, lanceolate or elliptic, rough leaves.

Thickets on limestone soil above Grasse, etc., rare. August-October.

**A. Linosyris** *Bernh.* = **Linosyris vulgaris** *Cass.* Goldilocks. A glabrous plant about a foot high, with woody base and wiry leafy stems. Leaves very narrow, linear, entire, acute, rather thick, dotted, 1-nerved. Heads in terminal, dense hemispherical corymbs. Involucre gummy; bracts subulate. Flowers bright yellow. Pappus reddish.

Limestone rocks and cliffs and hill-slopes, rather rare. September-November.

### ERIGERON *L.*

**E. acris** *L.* Common Erigeron. Stem leafy, 1-2 ft., branched above. Leaves entire, radical obovate-lanceolate; stem-leaves linear-oblong, obtuse, half-amplexicaul. Heads axillary and terminal; peduncle slender. Involucral bracts narrow-linear, hispid. Ray flowers narrow, pale purple; disk pale yellow. Ligules scarcely longer than the reddish pappus. Fruit hispid. Annual or biennial.

Dry, sandy places, etc. June-September.

**E. canadensis** *L.* Canadian Erigeron. Annual 1-2 ft. high. Stem leafy, branched above. Leaves all linear or oblong-lanceolate, entire or slightly toothed, nearly glabrous. Heads very many, small; peduncle slender. Involucral bracts green with scarios margins, glabrous. Ray flowers dirty white, or pale purple.

Road-sides, fields, and waste places, very common. June-October.

**E. glutinosum** *L.* = **Jasonia glutinosa** *DC.*, grows on rocks on Mont Faron and at Ollioules near Toulon. It is a viscous plant with woody root-stock, narrow oblong-spathulate entire leaves, pointed and glandular, and yellow tubular flowers in small corymbs. July-September.

### BELLIS *L.* DAISY.

**B. annua** *L.* Annual Daisy. Annual, 1-3 inch high. Stem slender, often leafy below. Leaves soft and thin, downy, toothed in upper half, oblong-spathulate. Heads rather small, solitary and terminal. Ray flowers white, often reddish beneath. Plant smaller than the common Daisy (**B. perennis** *L.*), which is also common on the Riviera.

Sandy places and hill-sides. March-June.

**B. silvestris** Cyr. (Plate XVII). Wood Daisy. Differs from the common Daisy by its more robust and taller growth, and its larger oblong-spathulate 3-nerved leaves, and more acute involucre bracts. Its flower heads are also larger and on very long scapes, sometimes a foot long. Ray flowers often deep rose.

Grassy places, borders of fields and woods. September-December.

### BELLIDIASTRUM

**B. Michellii** Cass. This Alpine Daisy with radical spatulate leaves and large heads of white flowers on long scape, descends to about 600 metres above Menton, according to Ardoine. It grows also in the higher mountains of the Var, and is frequent in the Maritime Alps. May-July.

### SOLIDAGO L.

**S. Virga-aurea** L. Golden-rod. Plant very variable according to situation, soil, etc.; several varieties, including **S. cambrica**, are recorded from the district. The typical plant has linear or lanceolate-oblong leaves, obscurely toothed. Heads crowded, shortly peduncled, golden yellow; involucre bracts linear, acute, glabrous, green, margins scarious. Pappus white.

Mountain woods and thickets. June-September.

### CONYZA Leyss.

**C. ambigua** DC. A greyish-green annual, about a foot high. Leaves linear, 1-nerved, hairy, lower leaves often toothed. Heads small, in a loose oblong panicle. Pappus reddish. Flowers dirty white or fawn coloured.

Fields and waste places, common. June-October.

### INULA L.

**I. crithmoides** L. Golden Samphire. A fleshy glabrous yellow-green plant, 1-2 ft. high. Stems stout, very leafy. Leaves linear, sessile, gradually narrowed to the base, thick, fleshy, entire or shortly lobed. Heads 1 inch in diameter, on long peduncles furnished with bracts. Flowers yellow. Pappus hairs rigid, dirty white.

Salt marshes and sea-sands. August-November.

**I. montana** L. Leaves linear-lanceolate, almost entire. Heads usually solitary, large and handsome, flowers yellow. Plant 6-12 in. high, covered with silky hairs.

Stony limestone slopes, ascending to the mountain region. June-August.

**I. hirta** L. Leaves broadly lanceolate, leathery, entire or finely serrate, downy, ciliate, half embracing the stem. Involucre bracts stiff, linear lanceolate, covered with long stiff cilia. Achenes glabrous. Pappus dirty white. Heads large, solitary, terminal. Flowers yellow, with long glabrous rays.

Dry slopes in the hills and lower mountains. June-August.

**I. squarrosa** L. = **I. spiræifolia** L. Leaves oblong-lanceolate, sessile, erect, very close together, toothed, glabrous, rough on both sides, strongly nerved. Involucre bracts very unequal, membranous, the inner ones linear acute. Heads shortly peduncled, in a short compact corymb. Flowers yellow.

Woods and stony places in the hills. June-October.

**I. viscosa** Ait. Plant glandular-viscous, 2-3 ft. high, resinous and aromatic in scent, very leafy. Leaves lanceolate, toothed, half amplexicaul, acute. Heads numerous, rather small, in a pyramidal spike. Flowers yellow.

Waste places, borders of fields, etc., very common on the littoral. September-November.

**I. graveolens** Desf. Plant annual, glandular-viscous, strongly scented, 1-2 ft. high. Leaves linear-lanceolate, entire, sessile. Heads numerous, smaller than the last, in a long spike. Flowers yellow. Outer involucre bracts herbaceous.

Waste, stony, and sandy places, also on clay. August-November.

The following also occur: *Inula Conyza* DC. (Ploughman's Spikenard), leaves ovate-lanceolate pubescent, corymbs branched; *I. britannica* L., rare by ditches near Pignans, Var; *I. salicina* L., an ornamental deep yellow species found in mountain woods; and *I. bifrons* L., a tall glandular viscous biennial with oval-oblong glabrous leaves embracing the stem. The last species was found by M. Jahandiez above Trigance in the N. of the Var in July, 1913.

#### PULICARIA Gaertn.

*P. odora* Reichb. An erect hairy plant, 1-2 ft. high. Leaves oblong, entire or obscurely toothed; root-leaves large, petioled, stem-leaves sessile, half amplexicaul, auricled. Peduncles rather thick at summit, woolly. Heads 2-4. Flowers yellow, rather large; pappus reddish.

Woods in the hills, common on the littoral. June-August.

*P. dysenterica* L. Flea-bane (*Inula dysenterica* L.). Plant woolly or cottony, with very leafy branched stem. Leaves oblong cordate, half amplexicaul, irregularly wavy and toothed. Heads 1 in. in diameter, few, terminal, ligules long. Involucre densely woolly, bracts setaceous. Fruit silky. Scales of pappus connate-toothed.

Sides of ditches and streams. Very common. June-September.

*P. sicula* Moris. Annual, 1-2 ft. high, erect, slender, often reddish, very leafy. Leaves linear-lanceolate, sessile, half amplexicaul, edges turned downwards, entire. Heads small, on long slender peduncles furnished with bracts.

Damp places and maritime meadows, very local. August-October. Hyères, Fréjus, Cannes, Grasse.

*P. vulgaris* Gaertn. has wavy lanceolate leaves, small auricles, and much-branched leafy stems. It grows in places flooded in winter near Hyères and Fréjus, and flowers in August and September.

#### BUPHTHALMUM L.

*B. salicifolium* L. Stem 1½-2 ft. high, branched at top and bearing several large yellow heads about 2 in. across, with narrow spreading ray flowers. Leaves lanceolate, acuminate, toothed. Scales of receptacle more or less truncate.

Wooded slopes in the north of the Var, rare, and in the Maritime Alps and Liguria. June-August.

Ardoinos gives *B. grandiflorum* as the plant of the Maritime Alps, but as Mr. Bicknell points out,<sup>1</sup> all the plants he has examined have the scales of the receptacle more or less truncate, a characteristic of *B. salicifolium*, though the very branching stems and long acuminate leaves are characters of *B. grandiflorum*.

#### ASTERISCUS Mærch.

*A. aquaticus* Mærch. = *Bupthalmum aquaticum* L. Stock annual, herbaceous. Leaves oblong, obtuse, entire, the upper ones sessile, half amplexicaul. Involucral leaves linear-lanceolate obtuse, much longer than the ray flowers, inner bracts oval. Scales of receptacle truncate. Flowers yellow. Stem erect, stiff, once or twice dichotomously branched.

Banks near the sea, road-sides, etc. (not in wet places). June-July.

*A. spinosus* G. G. = *B. spinosum* L. A stiff-branched biennial. Leaves oblong, obtuse, hairy, mucronate. Heads solitary, subsessile. Flowers yellow. Involucral bracts spreading, lanceolate, conspicuous and ending in a sharp spine. Achenes of ray flowers broadly winged.

Road-sides and dry banks, very common. May-July, and sometimes, as in 1912-13, throughout the winter.

*A. maritimus* Mærch. = var. *littoralis* Ford. This occurs in several places near Toulon as e.g. St. Cyr, Sanary, and La Seyne. The leaves are oblong-spathulate, entire, never amplexicaul. Root-stock woody. Flowering heads with one or two floral leaves, not spiny.

<sup>1</sup> "Flora of Bordighera and San Remo," p. 149.



## CALENDULA L.

**C. arvensis** L. (Plate XVII). An annual, 4-12 in. high, branched and leafy, and strongly scented. Leaves oblong-lanceolate, shortly apiculate, almost entire, the upper ones half amplexicaul, pubescent. Outer achenes curved, spinous dorsally, inner ones ring shaped, smooth or spiny. Heads solitary and terminal. Flowers yellow.

Cultivated ground and waste places, very common; flowering nearly all the year round, as the generic name implies. It is very variable and a small flowered variety called **C. parviflora** Rouy is not infrequent near Toulon, Carqueiranne, Hyères, etc.

## PHAGNALON Cass.

**P. saxatile** Cass. Stems almost woody at base, white, tomentose. Leaves narrow, linear, entire or remotely toothed, the edges rolled under, tomentose underneath. Heads solitary, terminal, on long, naked peduncles. Involucral bracts oval or lanceolate, acuminate, outer ones reflexed; brownish-yellow and scarious.

Rocks, walls, and dry banks, common. March-July, and sometimes in winter.

**P. sordidum** DC. Stems erect, branching, woody at base. Leaves narrow, linear, rolled under, tomentose beneath. Heads 1-4 together, almost sessile at the ends of the branches. Involucral bracts imbricate, scarious, brownish-yellow. Flowers yellow.

Rocks and old walls on the littoral. May-July.

These two plants sometimes hybridise.

## HELICHRYSUM DC.

**H. Stœchas** DC. "Everlasting." Plant bushy, about a foot high, stem almost woody at base. Leaves linear, revolute at margins, white tomentose, but sometimes greenish above. Flower-heads in a dense corymb, globular. Involucre and flowers pale golden-yellow; involucral bracts shining, scarious.

Dry hills and woods and sandy places, common. April-July. Polymorphic. "Stœchas" is taken from the old Greek name for les Iles d'Hyères, where this and **Lavandula Stœchas** are abundant.

**H. angustifolium** DC. Differs from the last by its smaller flower heads, paler and more cylindrical, and by its involucral bracts, the upper ones being narrower and glandular. The leaves are rather longer and often greener.

Dry arid places, rare. Near Nice, Antibes, Ile St. Marguerite, and Fréjus.

## GNAPHALIUM L. CUDWEED.

**G. luteo-album** L. Leaves white tomentose, linear-lanceolate, half-amplexicaul. Heads in terminal clusters, not leafy. Involucre and flowers pale yellow.

Sandy places and old damp walls. May-July. A cosmopolitan plant.

**G. silvaticum** L. Wood Cudweed. Leaves white tomentose beneath, green above, linear-lanceolate, lower leaves broader, spatulate. Stem erect. Involucral bracts scarious, edged with brown. Heads numerous in a long stiff narrow spike, with a few narrow linear leaves at the axils.

Mountain woods on siliceous soil in Alpes-Marit. and Liguria.

**G. uliginosum** L. occurs in the mountain region of Alpes-Marit.

## ANTENNARIA R. Br.

**A. dioica** Gaertn. Mountain Cudweed is frequent in the higher mountains and descends to Ste. Agnes above Menton at 600 metres, and it also occurs near Grasse. It is a small creeping plant, with oblong leaves, white underneath or on both sides. Flower-heads 3 or 4 together in compact terminal corymbs. Flowers dioecious, white or rose. June-July.

## FILAGO L.

**F. gallica** L. = *Logfia gallica* Coss. et G. Narrow Cudweed. Leaves silky, white or greenish, linear, very acute. Stems erect, slender, branched (often from the base). Involucral bracts linear obtuse, hairy dorsally, glabrous and scariosus at summit. Heads ovoid conical, 5-angled. Flowers yellow. Annual. Sandy fields and waste ground. May-August.

**F. minima** Fries. Small Cudweed. Annual, 4-8 in. high. Leaves silky, linear-lanceolate, acute. The floral leaves shorter than the clusters of 3-5 heads. Involucral bracts star-shaped when ripe, cottony at base, shining at the tips. Flowers yellowish.

Sandy fields, rather rare. June-August.

**F. spathulata** Presl., **F. germanica** Huds., and the var. **canescens** G. G. also occur, but are difficult to separate.

## MICROPUS L.

**M. erectus** L. Annual, erect, 3-9 in. high, covered with white tomentum. Leaves lanceolate-obtuse. Heads in clusters enveloped in a mass of white wool. Achenes enclosed in the involucral bracts. Flowers yellowish.

Sandy fields and dry hills, especially on limestone. May-July.

## EVAX Gaertn.

**E. pygmæa** Pers. A small dwarf annual,  $\frac{1}{2}$ -2 in. high. Leaves obovate spathulate-obtuse, whitish, around the terminal flower-heads. Scales of receptacle ovate-lanceolate, acuminate. Flowers dull yellow.

Dry grassy, sandy places near the sea, local. April-June. This can be found on the sandy Isthmus of Giens near Hyères, close to the path from Almanarre.

## DIOTIS Desf.

**D. candidissima** Desf. = **D. maritima** Cass. Bushy, about a foot high, covered with dense white tomentum. Leaves oblong, obtuse, sessile, entire or slightly toothed. Heads in small dense terminal corymbs. Scales of receptacle oblong, acuminate, tips woolly.

Sea-sands. June-September. Plage de Giens and la Plage d'Hyères, etc.

## ANACYCLUS Pers.

**A. radiatus** Loisel. Annual, about 1 ft. high, branched. Leaves 2-pinnatipartite, with linear segments. Involucral bracts with a broad fringed scariosus appendix. Flowers yellow, in large terminal heads, 3-3 $\frac{1}{2}$  cm. in diameter (an inch).

Sandy places, uncommon. May-July.

**A. clavatus** Pers. Annual. Ray flowers white. Scales of receptacle broad, oboval. Achenes wedge-shaped, much compressed. Peduncle thick at the top.

Road-sides and waste places near Toulon, rare. May-July.

## ANTHEMIS L.

**A. tinctoria** L. = *Cota tinctoria* Gay. Yellow Camomile. Stem erect, branched. Leaves deeply pinnatipartite, with toothed segments, rachis broad. Flowers bright yellow, ray flowers rather short, rarely none (var. **discoidea**). Heads on peduncles about 4 in. long.

Stony hill-sides and waste places. June-July.

**A. altissima** L. = *Cota altissima* Gay. Annual, erect, almost glabrous. Ray flowers white. Leaves 2-pinnatipartite. Peduncles much thickened at top at maturity. Scales of receptacle oboval, sharply mucronate.

Fields and road-sides. April-July.

**A. Cotula** L. Fetid Camomile. Annual, erect, glabrous. Leaves glandular dotted, segments very narrow. Heads on peduncles more slender than in **tinctoria** or in **arvensis** and involucral bracts narrower at tip. Scales of receptacle

setaceous, shorter than the flattened disk-flower. Ray flower usually neuter, white. Odour fetid.

Fields and cultivated ground. May-September.

**A. arvensis** L. (Corn Camomile), **A. nicæensis** Willd., **A. maritima** L., **A. montana** L., **A. saxatilis** DC., and **A. Triumfetti** All. (= **Cota Triumfetti** Gay), **A. mixta** L., **A. nobilis** Gay (True Camomile), **A. fuscata** Brot., also occur. **A. fuscata** is a glabrous annual with white ray flowers, and brownish involucre bracts deflexed upon the peduncle when ripe. It is common in cultivated fields in the Var and flowers from February-May.

#### ACHILLEA L.

**A. Millefolium** L. (Millfoil) is very common and very variable as elsewhere. The var. **A. setacea** W. et K. has more numerous, more delicate and almost setaceous leaf-segments and smaller dirty-white flowers. It is found on the borders of fields and in waste places. May-September.

**A. Ageratum** L. Leaves oblong, very obtuse, shortly petioled, toothed, shortly hispid, dotted, nearly glabrous; lower leaves lobed and toothed. Flowers yellow. Heads small, 2-4 mm., becoming subcylindric when ripe, forming a compact corymb.

Damp places, road-sides, etc. May-August.

**A. tomentosa** L. Leaves bipinnatisect, broadly linear, woolly or almost tomentose; about 20 segments close together on each side. Plant whitish-green. Flowers bright yellow, in a small compact terminal corymb.

Dry hill-sides, etc. May-June.

**A. nobilis** L., **A. odorata** L. (flowers dirty yellowish-white) and **A. ligustica** All. (near Nice) also occur. **A. nobilis** has whitish-green, bipinnatisect leaves and dirty white flowers. **A. ligustica** is like it, but with broader rachis and fewer segments.

#### MATRICARIA L.

**M. Chamomilla** L. Common Matricaria or Wild Camomile. A glabrous, aromatic annual, with hollow receptacle, conical and acute, and very small yellowish achenes. Ray flowers white, deflexed. It closely resembles the Fetid Camomile.

In fields and crops, but not common in the south. April-July.

**M. inodora** L. Scentless Matricaria. A glabrous annual differing from the last by its solid receptacle, obtuse at the summit.

Cultivated fields, uncommon. May-September.

#### PYRETHRUM Scop.

**P. corymbiferum** Schrank = **Leucanthemum corymbosum** G. G. An erect branched leafy plant, 2 ft. high, greyish-green. Leaves dull green above, pubescent beneath, upper ones sessile, with 8-15 pairs of lanceolate pinnatifid segments, deeply incised. Flower heads in corymbs; ray florets white. Upper involucre bracts obtuse and scarious at apex. Achenes with 5 ridges.

Wooded hills ascending into the mountains, local. May-July.

**P. Parthenium** Smith is found, perhaps as an alien, in waste places, fields, and road-sides. April-August. It is often cultivated.

#### LEUCANTHEMUM Adans.

**L. pallens** DC. = **Chrysanthemum pallens** Gay. Stem erect, angular, 1-2 ft. high. Lower leaves spatulate, toothed towards apex; middle ones lanceolate, with several sharp teeth; upper ones entire at base. Involucre paler than in **L. vulgare** (the common Ox-eye Daisy), achenes of the ray surmounted by a divided crown, those of the disk without it. Ray flowers white, in large heads.

Fields, hill-sides, and cultivated places, chiefly on the littoral. May-July.



**L. montanum** DC., **L. graminifolium** Lamk. (leaves narrow linear) and **L. vulgare** L. (common Ox-eye Daisy) also occur.

#### CHRYSANTHEMUM DC.

**C. Myconis** L. An erect annual, about 1 ft. high. Lower leaves obovate-spathulate, upper ones half amplexicaul; all finely serrate, often with a red margin. Flower heads large, terminal. Flowers yellow. Achenes crowned by a tubular membrane.

Fields and cultivated ground in the littoral region. May-July.

**C. segetum** L. Corn Marigold, Annual, 1-1½ ft. high, erect. Leaves petioled, obovate, toothed and lobed, lower pinnatifid, upper ones half amplexicaul, all glabrous. Heads 2 in. diameter, on stout peduncles, ray flowers bright yellow. Involucral bracts very broad, with broad scarious margins.

Fields and waste sandy places. May-July.

**C. coronarium** L. = **Pinardia coronaria** Less. Annual, 1-2 ft. high, leafy. Leaves mostly bipinnatifid, with lanceolate mucronate lobes, upper ones sessile and auricled. Inner involucral bracts broadly scarious, especially towards tip. Flowers bright yellow in large solitary terminal heads.

This beautiful plant is often found naturalized on the littoral. April-June.

#### TANACETUM L. TANSY.

**T. annuum** L. Annual, 1 ft. high, erect, pubescent. Leaves small, not more than 2 cms. long, pinnatisect, with linear segments usually trifid. Heads small, shortly peduncled in little terminal corymbs. Flowers yellow.

Waste places, rare. July-September. Antibes, Cannes, La Garde, La Farlède, Hyères, Le Pradet, etc.

**T. vulgare** L. (Common Tansy) is rare. It occurs near Nice, St. Martin Vésubie, Collobrières, Garde-Freinet and between Toulon and Le Pradet.

#### SANTOLINA L.

**S. Chamæcyparissus** L. A small under-shrub with branched woody stems. Leaves whitish, pinnatifid, with short sessile, linear-cylindric, obtuse, close-set lobes. Involucral bracts glabrous, scarious at tip. Heads solitary, terminal, globular 8-10 mm. in diameter. Flowers all tubular, those of the circum. being scarcely ligulate. Very variable species.

Arid places, especially on limestone. June-August.

**S. viridis** Willd. A sub-species, smaller and greener, with narrow toothed leaves, occurs near Toulon on Mont Faron and Cap Brun.

#### ARTEMISIA L.

**A. Absinthium** L. Wormwood or Absinth. Leaves silky on both sides, 2-3-pinnatifid, segments oblong obtuse spreading. Heads hemispherical, drooping, silky in paniced leafy racemes, outer flowers only fertile. Receptacle hairy.

Waste places, especially in the mountain district. June-September.

**A. camphorata** Vill. Leaves green, glabrous, dotted, bipinnatisect, segments very narrow, petioled. Heads hemispherical, drooping in a narrow panicle. Stem woody at base, branched. Flowers yellow. Plant smelling of camphor.

Hill slopes and rocky places in the mountains. August-October.

**A. vulgaris** L. (Mugwort, flower heads ovoid, with cottony involucre) and **A. glutinosa** Gay (a very glabrous form of **A. campestris**, viscous in upper part) also occur. **A. maritima** L. (type) was found in 1909 at St. Aygulf near Fréjus new to the French Riviera; but the var. **A. Gallica** Willd. is frequent on salt marshes near Hyères, Toulon, Bandol, etc. September-October. It is less white than **maritima**, with more oblong flower-heads which are erect and not pendent, nor unilateral; and the panicles are also erect and not drooping.

**A. arborescens** L. Shrubby Artemisia. Plant woody, 3-4 ft. high, white-silky. Leaves silky and very white on both sides, bipinnatisect, with narrow linear, obtuse segments. Involucre white tomentose. Receptacle covered with long dirty white hairs.

Naturalized on rocks and old walls on the Castle Hill at Hyères, Toulon, La Valette, and Ile de Port Cros.

### DORONICUM L.

**D. plantagineum** L. Plantain Doronic. Root-leaves ovate, long petioled, almost glabrous, toothed, stem-leaves oblong-lanceolate, sessile, half-amplexicaul. Flowers yellow, in a very large, solitary terminal head.

Slightly damp woods in a few places in the Var, e.g. Roquebrune and the Forêt du Dom. April-June.

**D. austriacum** Jacq. and **D. cordatum** Lamk. are found in mountain woods only in the Maritime Alps. The former has lower leaves ovate lanceolate suddenly contracted into a broadly winged petiole, upper leaves narrow and amplexicaul. The latter has deeply cordate and long petioled lower leaves. (Leopard's bane.) Flowers of both large, yellow.

### SENECIO L.

**S. Doria** L. Plant 2-5 ft. high, erect, glabrous. Leaves fleshy, serrated; the lower ones large, oblong elliptic, produced below into a winged petiole, the next lanceolate-oblong or oval, sessile, amplexicaul, the upper leaves small, acuminate. Heads small, in irregular corymbs, with 4 or 5 short yellow ray flowers.

Damp places and sides of streams. June-August.

**S. Gerardi** Gren. et Godr. Stem about 1 ft. high, woolly below. Leaves thin and soft, woolly below and often above, lower ones ovate, rounded, abruptly reduced to a long, winged petiole. Flowers pale yellow in a large and usually solitary terminal head. Closely allied to the Alpine **S. Doronicum** which is found in the Margès and Maritime Alps.

Dry wooded slopes and hilly pastures. May-July. Peculiar to France.

**S. Cineraria** DC. = **Cineraria maritima** L (Plate XVII). Stem erect, branching, 1-2 ft. high, woody at base. Leaves pinnatifid, thick, upper ones with narrow segments, dark green above, white tomentose beneath; upper stems also white. Heads numerous, in a close compound corymb. Involucre white tomentose, achenes glabrous. Flowers yellow.

Rocks, cliffs, and walls near the sea, but extending inland a considerable distance, e.g. at Draguignan, Le Luc, Solliès-Toucas, and the Roja valley just below S. Dalmazzo di Tenda. May-July.

**S. telonense** Albert = **S. Jacobæa** × **Cineraria**. This hybrid was found by the late M. Albert on Mont Coudon near Toulon, in rocks and shady places, with the supposed parents. It has the habit of the former but with rather larger heads, but the white felt of the latter.

**S. lividus** L. Annual, 1-1½ ft. high, glandular above. Leaves pinnatifid with equal lobes, sessile, amplexicaul. Root-leaves usually purple beneath, prolonged below into a petiole, with obovate limb. Outer involucre bracts 4-5, short. Heads few, in a loose corymb. Flowers yellow, with very short rays.

Pine-woods and sandy places, etc. May-June.

**S. vulgaris** L. (Groundsel), **S. viscosus** L. (Viscous Groundsel), **S. gallicus** Vill., **S. crassifolius** Willd., **S. leucanthemifolius** Presl. (rare near Toulon and St. Tropez), **S. Jacobæa** L. (Ragwort), **S. aquaticus** Huds., **S. erucifolius** L. and **S. silvaticus** L. (occasionally in mountain woods in Alpes-Marit.) also occur.

## Sub-family II. CYNAROCEPHALÆ.

Florets all tubular, those of the centre hermaphrodite, rarely neuter or unisexual; those of circumference sometimes female or neuter.

## ECHINOPS L.

**E. Ritro** L. (Plate XVIII). Plant 1-2 ft. high, usually branched but sometimes simple and 1-headed, white tomentose, not glandular. Leaves pinnatifid, green and glabrous or cottony above, white tomentose beneath, lobes very spiny. Scales of partial involucre glabrous. Flowers blue, in a more or less spherical head. Each floret has a separate involucre.

Stony slopes and waste places. July-August.

**E. sphærocephalus** L. A taller plant, erect, glandular. Leaves pinnatifid, cottony beneath. Scales of partial involucre glandular-hairy. Flowers whitish or very pale blue, in a very spherical head.

Uncultivated ground in the montane region, rather rare. June-September.

## ARCTIUM L. BURDOCK.

**A. Lappa** L. = **A. majus** Bernh., **A. minus** Bernh., and **A. tomentosum** Mill. are found in the Var and probably in the Alpes-Marit.

See "The British Species of Arctium," by A. H. Evans in "Journ. Bot.," April, 1913, for a good account and synonymy of these plants.

## XERANTHEMUM Tourn.

**X. inapertum** Willd. An erect whitish annual with spreading branches. Leaves sessile, linear, entire, white tomentose. Heads solitary, ovoid, many flowered. Involucral bracts glabrous, mucronate, the outer broadly obovate and almost transparent. Flowers purple.

Dry places and stony fields. June-August.

**X. cylindraceum** Sibth. et Sm. is rare, but found at Le Luc and at Lagoubran. The involucre is cylindrical, the involucral bracts are not mucronate, and the outer ones are dorsally tomentose.

Dry places. June-September.

## STÆHELINA L.

**S. dubia** L. A much branched, leafy under-shrub. Leaves white tomentose beneath, linear and almost entire, sometimes sinuate. The white pappus is much longer than the cylindrical reddish-purple involucre. Flowers purplish.

Arid stony places, fairly common. May-July.

## ATRACTYLIS L.

**A. cancellata** L. (Plate XIX) is a slender, cottony annual with soft, narrow lanceolate, finely toothed leaves, and purple flowers enclosed within a green involucre, whose outer bracts have long slender spines.

It grows in arid places near Menton, Cap Martin, Villefranche, and Cannes. June-July.

## CARLINA L. CARLINE THISTLE.

**C. lanata** L. A cottony or rarely glabrous annual, 6-12 in. high, with usually only 1 head of yellowish flowers. Leaves whitish-green, cottony beneath, spiny, half amplexicaul, oblong-lanceolate. Inner involucral bracts purplish on both sides.

Stony places, road-sides, etc., common. July-August.

**C. corymbosa** L. (Plate XVIII). An erect, branched annual. Leaves rather leathery, pale, glabrous, sinuate spiny, half amplexicaul and auricled. Heads several, composed of yellow involucral bracts and yellow flowers, the inner yellow bracts being linear-lanceolate and not ciliate.

Woods and waste ground, common. July-October.



**C. acanthifolia** *All.*, with large cottony leaves in a flat rosette, and very large heads; **C. acaulis** *L.*, with very short stems and large and handsome silvery heads; and **C. vulgaris** *L.* grow in the hills and lower mountains.

#### GALACTITES *Mæsch.*

**G. tomentosa** *Mæsch.* (Plate XIX). Biennial, thistle-like, 1-2 ft. high, erect, branched above, tomentose. Leaves narrow-lanceolate, pinnatifid, prickly, green, streaked with white above, white tomentose beneath. Heads oval. Flowers pinkish-purple or deep lilac. A very common but attractive thistle, which lasts long in water.

Waste places and road-sides. April-July.

**Tyrinnus leucographus** *Cass.* with cottony white prickly leaves, grows in arid places on the littoral. **Silybum Marianum** *Gaertn.*, the true Milk Thistle, with large green leaves marbled with white above, and very prickly heads, grows on road-sides and waste places as in England.

#### ONOPORDON *L.*

**O. Acanthium** *L.* Cotton Thistle. A tall, stout, spiny biennial, with white tomentose leaves, sinuate and very decurrent. Heads globular, very large, stem much winged. Flowers purple.

Road-sides, rather rare, especially on the littoral. June-July.

**O. Illyricum** *L.* A somewhat similar plant with glandular corolla, longer heads and broadly lanceolate, sharply acuminate involucre bracts.

Dry, sandy places and arid slopes. June-August.

#### CARDUNCELLUS *Adans.*

**C. monspeliensium** *All.* (**Carthamus Carduncellus** *L.*). A dwarf thistle, 3-8 in. high, leafy. Leaves deeply pinnatifid, leathery, green, glabrous; segments linear-lanceolate, spiny. Flowers blue. Bracts large, spreading.

Arid hill-sides, rare. May-July.

#### CIRSIUM *Adans.*

**C. trispinosum** *Mæsch.* (**Chamæpeuce Casabonæ** *DC.*) is well figured by M. Jahandiez in "Cat. des Plantes du Var" and in "Annales Soc. Hist. Nat. Toulon" (1913). The Isle of Levant is its only station in France, and its most northern limit. Nyman says it was discovered there and written about by Casabona in the sixteenth century. It is a tall, stiff, biennial thistle, unbranched and glabrous. Leaves numerous, sessile, lanceolate, green and shining above, whitish or reddish with tomentum beneath, edged with fine spines in bundles of 2-5. Flowers purple.

Among true Thistles the following are the more important of those occurring on the Riviera:—

**Cirsium Acarna** *Mæsch.*, **C. trispinosum** *Mæsch.* (the plant described from the Isle of Levant), **C. lanceolatum** *Hill.*, **C. ferrox** *DC.*, **C. monspesulanum** *All.*, **C. tuberosum** *All.*, **C. acaule** *Scop.*, **C. arvense** *Scop.*, **Carduus acicularis** *Bert.*, **C. tenuiflorus** *Curt.*, **C. pycnocephalus** *L.*, **C. litigiosus** *N. et B.*, **C. spiniger** *Jord.*, **C. nigrescens** *Vill.*, and **C. carlinifolius** *Lam.*

#### CNICUS *L.*

**C. benedictus** *L.* A very dwarf pubescent annual. Leaves pinnatifid or toothed, with strong white nerves. Outer involucre bracts long, and resembling leaves, inner ones ending in a long spine with spreading prickles on each side. Flowers yellow. Achenes brown, shining, shorter than the pappus.

Fields and sandy places. May-July.

#### CARTHAMUS *L.*

**C. cæruleus** *L.* = **Centrophillum cæruleum** *G. G.* Leaves toothed or pinnatifid, leathery, green, shining. Heads ovoid, rather large with very large

lanceolate spiny outer involucre bracts, the middle ones ending in an obtuse lacinate appendix. Flowers blue. Stems 1-2 ft. high. Achenes scabrous.

Borders of fields and ditches, rare. May-July.

**C. lanatus** L. = **Centrophyllum lanatum** DC. Annual. Leaves leathery, pubescent, half-amplexicaul, pinnatifid, with lanceolate very spiny lobes. Flowers yellow. Involucre bracts ending in an acute point, spiny at the margins. Outer bracts large and leafy as in the other species. Achenes smooth.

Waste places and road-sides. July-September.

### CENTAUREA L.

**C. conifera** L. = **Leuzea conifera** DC. (Plate XIX). Stem 4-12 in., simple, 1-headed or rarely branched, tomentose. Leaves greenish above, white tomentose and cottony beneath, pinnatifid, with narrow segments, the lower ones petioled. Involucre very large, pale brown, ovate, bracts hidden by the scarious, rounded, lacinate tips. Pappus white, very long. Flowers purple, inconspicuous.

Pine-woods and stony slopes. Local. May-July.

**C. Jacea** L. Stem 1-2 ft., erect, angular, branching above. Lower leaves petiolate, lanceolate, sinuate-dentate, or pinnatifid; upper ones oblong-lanceolate, often, toothed at base. Flowers purplish, in terminal heads. Involucre bracts concave, scarious, yellow with darker centre, lower ones fringed and torn.

Damp meadows, common. June-September.

**C. amara** L. Sometimes considered a sub-species of **C. Jacea** L. Stem erect and slender. Lower leaves linear-lanceolate, sinuate toothed or quite entire; upper ones linear, all greyish-green. Flowers in solitary terminal heads, purplish. Involucre bracts with shining, entire or scarious, ragged, yellowish appendages.

Dry banks on clay or limestone. June-October.

**C. pectinata** L. Upper leaves oval, sinuate, auricled, greyish-green. Involucre bracts with very long reflexed appendix, edged with long cilia. Heads medium, purplish-red.

Rocky places and hilly slopes, uncommon. June-August.

**C. intybacea** Lamk. Stems woody at base, 2-3 ft. high, simple or branched, glabrous like the leaves. Lower leaves deeply pinnatifid with linear-lanceolate entire segments; upper leaves linear entire, or with two stipule-like lobes at base. Involucre shining, globular. Flowers purplish.

Rocks and dry hill-sides in the Var, as on Mont Coudon and Faron. June-August.

**C. montana** L. is represented in the hilly districts by the sub-species **C. axillaris** Willd. and **C. variegata** Lam. **C. axillaris** is very variable; sometimes the leaves are green and sometimes silvery, lanceolate and entire or toothed and deeply pinnatifid. Involucre bracts often have a dark brown scarious border with the fringe dark at base or a pale border with pale fringe.

Woods and mountain pastures. May-July.

**C. collina** L. A handsome species with rather pale yellow flowers surmounting a large solitary globular involucre. Involucre bracts green, with pale brown fringe, and ending in a strong spreading spine usually branched near the base. Lower leaves petioled, generally lyrate and bipinnatifid; upper ones sessile, pinnatifid with almost linear segments. Stems very angular and rigid. Snails are very partial to this plant.

Road-sides, fields, and waste places on the littoral. June-August.

**C. paniculata** L. A very variable species with many different varieties, but according to Bicknell divided into two chief forms:—

(i) "A greyish plant; stem-leaves with linear divisions rolled at the edges; involucre pale, oblong or ovoid-oblong rather narrowing towards the base." Common.

(ii) "A greenish plant; leaves with broader divisions and flat; involucre larger, rounder at the base, the bracts often somewhat coloured." This is a mountain variety.

The type and different varieties grow on hill-sides, woods, and dry places. June-September.

**C. solstitialis** *L.* Yellow Centaurea. A whitish tomentose plant, with erect branching stems. Lower leaves lyrate or pinnatifid; upper ones lanceolate or linear, decurrent. Flowers yellow, in terminal, globose heads. Middle bracts of involucre with a very long yellow spine, and with several short lateral spines. Fields and waste places, rather common. July-October.

**C. Calcitrapa** *L.* Star-thistle Centaurea. Stems rigid, diffusely branched from beneath the heads. Leaves pinnatifid, with recurved aristate distant lobes. Involucre bracts with long, strong, spreading spines, with a few smaller basal spines. Pappus 0. Flowers rose-purple, not extending beyond the spines.

Waste places and road-sides, very common. June-September.

**C. aspera** *L.* Another very variable species, stems spreading and branched. Leaves linear-oblong, toothed or sinuate, but most variable; peduncles leafy. Involucre globose, bracts tipped with 5 palmately spreading reflexed spines. Bristles of receptacle white; pappus white. Flowers purple.

Waste places, borders of fields and roads; common, and flowering sometimes throughout the year but chiefly from June to September.

The following, and perhaps other species of this enormous genus also occur:—

**C. Cyanus** *L.*, the blue Corn-cockle of fields and corps; **C. Scabiosa** *L.* (the common greater Knapweed of England); **C. cinerea** *Ard.* (very rare in the Esterel, etc.). **C. melitensis** *L.*, and **C. salmantica** *L.* (rarely near Toulon, Fréjus, etc.). **C. nervosa** *Willd.*, **C. uniflora** *L.*, and **C. flosculosa** *Balb.*, grow in the Alps above our limit.

#### CRUPINA DC.

**C. vulgaris** *Pers.* = **Centaurea Crupina** *L.* A slender branched annual, a foot high. Root-leaves entire and soon disappearing. Stem-leaves rough, pinnatisect, with linear toothed segments. Heads of 4-5 purple flowers. Involucre oblong, slender, glabrous. Achenes large, inflated, with red or dark brown pappus.

Dry borders of fields and stony hill-sides. May-August.

**C. Crupinastrum** *Vis.* (Plate XIX). Very similar to the last<sup>1</sup> but the flower heads are larger, the involucre rounder at the base, and the flowers more numerous; the base of the achenes is compressed, not rounded, and the hilum is small, linear, and oblique. It does not appear to have been recorded from the Var or Alpes-Marit., but may have been overlooked, for it occurs, though rarely, near Bordighera. May-June.

#### SERRATULA L. SAW-WORT.

**S. tinctoria** *L.* Plant 1-3 ft. high, erect, branched, with several heads. Leaves very variable, deeply pinnatifid with finely serrate lobes. Heads rather small, oblong-cylindric. Flowers reddish-purple. Involucre and pappus reddish.

Woods and damp meadows. July-October.

**S. nudicaulis** *DC.* with simple 1-headed stem, naked in the upper portion, and entire lower leaves, grows in mountain woods and pastures, and flowers from June to August.

**S. heterophylla** *Desf.* also has a simple 1-headed stem, naked in upper portion, but its lower leaves are lyrate-pinnatifid and largely toothed.

It is found in meadows in the Maritime Alps in June and July.

**Jurinea humilis** *DC.* grows on the ridge of Sainte-Baume. June.

<sup>1</sup> See interesting notes on **Crupina** by M. G. Beauverd in "Plantes nouvelles ou critiques de la Flore du Bassin du Rhone," Part II (Genève), 1912. He considers the ten different binomials under **Crupina** in "Index Kewensis" may be reduced to these two species.



## Sub-family III. CICHORIACEÆ OR LIGULIFLORÆ.

Florets all ligulate, hermaphrodite.

**SCOLYMUS L.**

**S. hispanicus L.** (Plate XVIII). Biennial or perennial, stem 1-3 ft. high, usually pubescent, interruptedly winged and spiny. Leaves sinuate pinnatifid, spiny, with non-cartilaginous margin and white nerves. Heads axillary, subsessile, enveloped by 3 spiny foliaceous bracts. Involucral bracts linear-lanceolate acuminate. Flowers yellow.

Road-sides and waste places, common. June-August.

**CATANANCHE L.**

**C. cœrulea L.** (Plate XVIII). Stems branched, 1-2½ ft. high. Leaves linear, very long, 3-nerved, lower ones often with 2-4 linear segments. Involucral bracts scarious, silvery, ovoid apiculate. Flowers blue, in a handsome solitary head on a long peduncle with scarious bracts at the summit.

Dry places among the hills. June-August.

**CICHORIUM L.**

**C. Intybus L.** The common Chicory with bright blue flowers is very frequent at the borders of fields, etc. June-September.

**C. divaricatum Schousb.** Differs from the last by its involucral bracts not being glandular, its smaller size, and smooth stem branched from the base. The crown of scales on the achene are also more developed.

Fields and slopes. June-September.

**TOLPIS Biv.**

**T. barbata Willd.** Annual, a foot high. Stem-leaves few, lanceolate, toothed; low ones petioled. Peduncles with bracts at the summit. Outer involucral bracts spreading, as long as the inner ones. Central flowers often brown, outer ones pale yellow.

Waste places and hill-sides. May-July.

**T. virgata Bert.** Biennial, glabrous or pubescent. Stem-leaves few, linear, root-leaves lanceolate. Peduncles almost without any bracts. Outer involucral bracts very short. Flowers lemon-yellow.

Same places as the former, but less common. June-July.

**HEDYPNOIS L.**

**H. polymorpha DC.** A very variable annual, 3-15 in. high. Leaves hispid, lower ones lanceolate, entire or toothed, elongated at the base; upper ones sessile. Subglobular heads of small, solitary, yellow flowers, at the end of long naked peduncles more or less hollow and swollen at summit.

Waste places and borders of fields, common throughout the littoral. April-June.

**HYOSERIS L.**

**H. radiata L.** Root thick, with hollow scapes 6-12 in. high, glabrous, 1-headed. Leaves all radical, deeply runcinate-pinnatifid, glabrous, with regular, angular segments. Heads of yellow flowers solitary.

Borders of fields, walls, and waste places, very common. March-June.

**H. scabra L.** Annual, dwarf. Scapes short and thick, much dilated at summit and hollow. Leaves radical, runcinate pinnatifid, rather hispid; yellow flowers in smaller cylindrical heads.

Borders of fields, rare. May. Monaco, Villefranche, Antibes, Ile Ste. Marguerite.

**RHAGADIOLUS L.**

**R. stellatus DC.** A diffuse very variable and glabrous annual, with few leaves. Lower leaves toothed or lyrate, with large terminal lobe. Achenes very long, curved and prickly and spreading in the form of a star. Flowers yellow.

Fields and waste places on the littoral. April-June.

**Lapsana communis** L. (Nipplewort) is widely spread. The lower leaves are lyrate-pinnatifid, upper ones entire. Flowering heads small, many, yellow.

#### HYPOCHÆRIS L. CAT'S-EAR.

**H. glabra** L. and **H. radicata** L. are common in sandy places, and **H. maculata** L., with leaves often spotted above with dark purple, occurs in mountain pastures (June-August).

#### SERIOLA L.

**S. ætnensis** L. Annual, slender. Root-leaves entire or toothed, oboval petioled, hairy; stem-leaves few, lanceolate. Involucre hispid with long spreading hairs. Flowers yellow. Achenes long, club-shaped.

Borders of fields and sandy places, uncommon. April-June.

#### THRINCIA Roth.

**T. tuberosa** DC. Roots formed of thick fibrous tubers. Leaves all radical, sinuate or runcinate, hairy. Scape simple, with a single terminal head of yellow flowers. Involucral bracts almost as long as the pappus. Inner achenes with short beak.

Cork-oak and other woods and shady places. June-November.

**T. hirta** Roth. and **T. hispida** Roth. are quite common. The former has leaves usually hairy, sinuate or almost pinnate, the latter has entire or toothed, more hispid leaves and more slender achenes. The leaves of all 3 species are radical.

#### LEONTODON L. HAWKBIT.

**L. crispus** Vill. Tap-root long. Scape erect, 1 ft. high, robust, hispid, never scaly at the top. Leaves all radical, pinnatifid, greyish with numerous stellate hairs. Achenes rugose, elongated at top, much longer than the dirty white pappus. Flowers yellow.

Dry, stony places in the hills. May-July.

**L. autumnalis** L., **L. Villarsii** Lois., and **L. hispidus** L. also occur commonly.

#### PICRIS L.

**P. pauciflora** Willd. A very hispid annual, 12-18 in. high. Lower leaves lanceolate-sinuate or toothed, upper ones linear-lanceolate. Peduncles very long, inflated above and suddenly contracted below the head, which is solitary and inflated when ripe. Achenes very curved, as long as the pappus. Flowers yellow. Involucral bracts boat-shaped.

Arid fields and stony places, rare. May-July.

**P. Sprengeriana** Lam., **P. hieracioides** L., and **P. echioides** L. (Ox-tongue or *Helmintia*) occur more commonly. The first has oblong, sinuate lower leaves and divergent branches to the inflorescence; the second has obovate lanceolate lower and half amplexicaul upper leaves, and fruit not beaked; and the third has its lower leaves sinuate-toothed, upper ones cordate, fruit beaked.

#### PODOSPERMUM DC.

**P. laciniatum** DC. Biennial, a foot or so high, erect, leafy, glabrous. Leaves mostly radical, deeply pinnatifid, with linear segments rarely entire. Achenes prolonged at base into a hollow foot. Flowers pale yellow, scarcely passing the involucre. Polymorphic.

Borders of fields and waste places. April-June.

**P. decumbens** G. G. occurs near Ollioules, Le Luc, and Carqueiranne, but is rare. Leaf segments very variable, the terminal one large. Involucral bracts downy, especially at the tip, which is often recurved.

## SCORZONERA L.

**S. hirsuta** L. Root thick. Stems about a foot high, slender, curved, usually simple with a solitary terminal head of yellow flowers. Leaves linear, very narrow, very hairy, close together; upper ones almost filiform. Pappus reddish.

Stony places in the hills and garigues. May-June.

**S. austriaca** Willd. and **S. hispanica** L. grow in the lower mountains and flower in May and June. The latter has several yellow terminal flower-heads and variable but usually linear-lanceolate leaves.

## TRAGOPOGON L. GOAT'S-BEARD.

**T. crocifolius** L. Annual or biennial. Stem 1-2 ft. high, glabrous, cottony below. Leaves linear, very narrow, the stem-leaves half amplexicaul. Peduncles not inflated at the top. Flowers reddish-purple, with yellow centre and tips, shorter than the involucre bracts. Achenes shorter than the long beak. Pappus reddish.

Borders of fields and dry places in the hills. April-June.

**T. australis** Ford. = **T. porrifolius** L. part. Annual or biennial, shorter than the last. Leaves linear, wavy, dilated at base. Peduncles much inflated at top. Flowers dull purple, much shorter than the involucre bracts. Achenes much elongated. Pappus reddish.

Borders of fields and dry places on the littoral. April-June.

The following with yellow flowers also occur:—

**T. pratensis** L., **T. orientalis** L., **T. stenophyllus** Ford., **T. major** Jacq., and **T. dubius** Scop. Also **T. Geropogon** Rouy (= **Geropogon glabrum** L.) with rose-coloured flowers.

## UROSPERMUM Scop.

**U. Daleschampii** Desf. Plant pubescent, a foot high. Leaves runcinate-lyrate. Flower-heads terminal, large, on long naked peduncles swollen at top. Involucre bracts tomentose, marked with black at edges. Flowers pale yellow, faintly tipped with black at extreme border and outer ones sometimes striped with purple beneath. Beak of achene attenuated from base to apex. Pappus yellowish.

Waste ground, borders of fields, etc., common. April-June.

**U. picroides** Desf. Plant hispid. Stem branching. Leaves sinuate-pinnatifid toothed, upper ones amplexicaul. Involucre covered with stiff white hairs. Beak of achene much dilated at base, then filiform. Pappus white. Flowers yellow.

Fields and waste places, fairly common. May-June.

## CHONDRILLA L.

**C. juncea** L. Biennial, 2-3 ft. high, glabrous, but hispid below. Stems erect, much branched. Stem-leaves linear, entire, lower ones lanceolate sinuate or runcinate, soon withering. Heads small, subsessile, solitary or in clusters of 2 or 3. Achenes crowned by 5 scaly teeth.

Sandy places, road-sides, etc., common. June-September.

## TARAXACUM Fuss.

**T. officinale** Wiggers (the Common Dandelion) is extremely variable in the south, and many varieties are recorded.

## LACTUCA L. LETTUCE.

**L. perennis** L. A branched, glabrous plant 1-2 ft. high. Leaves deeply pinnatifid, often runcinate with nearly linear segments, the stem-leaves embracing the stem with 2 rounded auricles. Heads long pedicelled, in a corymbiform panicle. Achenes black, about 13 mm. long. Flowers blue or pale violet, rather large.

Stony hills and limestone rocks and cliffs. April-July.







PLATE XX.

1. *Specularia falcata*. 2. *Campanula bononiensis*. 3. *Coris monspeliensis*.  
 4. *Arbutus Unedo*. 5. *Primula marginata*.

**L. tenerrima** Pourr. A somewhat similar plant with much smaller blue flowers, and stem-leaves with 2 sagittate acute auricles. Achenes oval, with beak of about the same length. Pappus yellowish.

Rocks and old walls, rare. June-July. Solliès-Toucas, and near Roubion.

The following species with yellow flowers occur in the district: **L. virosa** L. (achenes nearly black with a broad border, and glabrous), **L. Scariola** L. (achenes pale, with a narrow border, and hairy at summit), **L. muralis** Presl., **L. viminea** Presl., and **L. saligna** L. with its var. **runcinata** G. G. which has stem-leaves all runcinate except the upper ones. **L. ramosissima** G. G. with bright yellow flowers is perhaps only a variety of **L. viminea** whose flowers are pale yellow.

#### PRENANTHES L.

**Prenanthes purpurea** L. A tall glabrous plant with almost entire auricled leaves glaucous beneath, the lower ones prolonged into a winged petiole, upper ones lanceolate. Flowers bluish-purple in a loose panicle.

Mountain woods, but chiefly above 2000 metres. July-August.

#### SONCHUS L. SOW-THISTLE.

**S. oleraceus** L., **S. asper** Hill., **S. tenerrimus** L., **S. glaucescens** Ford., **S. giganteus** Shuttle., **S. arvensis**, and **S. maritimus** L. are found in various parts of our area. Some are very polymorphic and difficult to distinguish. **S. oleraceus** in various forms is one of the commonest plants epiphytic upon the Palms about Hyères. **S. arvensis** and **S. maritimus** also occur on the Palms, with various other plants.

#### PICRIDIMUM Desf.

**P. vulgare** Desf. A glabrous and glaucous annual. Stems 1-2 ft. high, erect, branched. Stem-leaves lanceolate, amplexicaul, with broad rounded auricles. Peduncles long, with several scales. Flowers yellow. Achenes brown, covered with large tubercles.

Waste places and fields. Very common on the littoral and flowering most of the year.

#### ZACINTHA Tourn.

**Z. verrucosa** Gaertn. is common in stony fields in the littoral. May-June. It is an erect annual, with nearly glabrous stem, but usually hairy leaves near the base of the stem. Leaves oblong, sinuate or lyrate; upper ones lanceolate with acute auricles. Heads small, nearly sessile, few, in the forks of the lateral branches swollen at the top.

#### PTEROTHECA Cass.

**P. nemausensis** Cass. = **P. sancta** F. Schulz. A slender and variable annual, 3-12 in. high. Leaves all radical, in a rosette, pubescent, oblong, lyrate pinnatifid. Heads on long branched peduncles, forming a loose corymb. Flowers yellow. Outer achenes much larger than the others.

Fields and road-sides, etc. Very common on the littoral. February-August. This plant is extending its range northward in France, and has already reached Lyon. In Liguria it extends to 900 m. in the hills.

#### BARKHAUSIA Mærch.

This genus, closely allied to **Crepis**, comprises the following littoral species: **B. albida** Cass. (in the hills and lower mountains), **B. foetida** DC., **B. taraxacifolia** DC., **B. setosa** DC., **B. Leontodon** DC., and the rare **B. Suffreniana** Lloyd, a small slender annual with oblong sinuate, rosette leaves, and lanceolate amplexicaul stem-leaves. Involucre hispid with short glandular hairs.

**B. Leontodon** (*Crepis leontodontoides* All.) is a Corsican plant, only found in this part of France. Stems slender. Leaves glabrous. Involucre never hispid.



**B. taraxacifolia** DC. is a very variable plant. It may have one upright stem or several almost prostrate ones. The leaves are almost entire, runcinate or pinnatifid. Peduncles and involucre bracts are grey with stellate hairs and often have black hairs as well, and these are sometimes glandular. Polymorphic. Grassy places, hill-sides, etc., very common. March-July.

#### CREPIS L. HAWK'S-BEARD.

**C. bulbosa** Cass. Root has long fibres ending in tubercles as large as a nut, and also horizontal stolons throwing up leaves which are long petioled, oblong-lanceolate entire or toothed, glabrous. Scape simple and 1-headed, erect, glandular at top. Flowers yellow. The rare *Orobanche pubescens* is parasitic upon it.

Sea-sands and occasionally in stony fields distant from the sea. April-June.

**C. nicæensis** Balb. Annual. Stems 1-2½ ft. high, erect, branched, strongly ridged, hispid below. Leaves pinnatifid and often runcinate; lower ones oblong, petioled, hairy, upper ones sessile, sagittate, flat. Heads larger than in the common British **C. virens**. Involucre hairy-tomentose, the bracts glabrous within. Achenes yellowish. Flowers yellow.

Dry places, woods, and pastures in the hills. May-July.

The following also occur on the littoral: **C. pulchra** L., **C. virens** L., **C. agrestis** W. et K., and **C. biennis** L.

#### ANDRYALA L.

**A. integrifolia** L. Annual, 1-2 ft. high, erect and branched covered with yellowish-white tomentum. Leaves lanceolate, upper ones sessile, entire, enlarged at the base; lower ones toothed or sinuate, attenuate at base. Heads of pale yellow flowers in a rather dense corymb. Peduncles and involucre glandular. Achenes brown, very small. Pappus reddish-white.

Dry places and fields. Very common on the littoral. June-October.

#### HIERACIUM L. HAWKWEED.

##### Sub-genus I. STENOTHECA Fries.

Involucre with bracts in 2 ranks, the outer ones very short, and resembling a little calyx.

**H. staticifolium** Vill. Glabrous and glaucous but sometimes a little hairy. Stem simple or slightly branched, usually leafless, with a few bracts at the top. Leaves radical, linear-lanceolate, entire or slightly toothed, attenuated into a foot stalk. Heads 1-3, but usually solitary, large. Flowers pale yellow, turning green on being dried. Involucre bracts mealy, linear-acute.

Sandy, gravelly river beds and stony places in the hills and lower mountains. June-August.

##### Sub-genus II. PILOSELLA Fries.

Involucre of imbricated bracts; achenes very small, slightly crenate at top; pappus hairs of equal length.

**H. Pilosella** L. Mouse-ear Hawkweed. A small and variable species with rooting stolons and spreading tufts of root-leaves. Leaves lanceolate, tapering at base, usually white-tomentose beneath, and with long silky hairs. Stems one headed, the flowers pale yellow, the outer ones often tinged with red. Involucre covered with close, whitish down, and stiff, spreading, black hairs.

Dry, sandy places from the coast to the mountains. April-September.

**H. Peleterianum** Merat, has shorter and thicker ascending stolons, and the plant is more densely hairy and with larger flower heads than the last.

Dry banks and stony places in the mountains, and recorded from Hyères by Shuttleworth. May-July.

**H. Auricula Lamk.** Plant usually with stolons. Stem with a few small flower heads. Leaves glaucous, in a rosette, lanceolate or obovate, with a few silky hairs. Inner involucre bracts obtuse.

Grassy places in the lower mountains. May-July.

**H. Sabinum Seb.** Plant sometimes with stolons. Stems tall, covered with stellate, simple and glandular hairs, bearing a cyme of rather numerous heads. Leaves lanceolate, with long silky hairs on both sides. Closely allied to **H. cymosum L.** which also occurs in many forms in the hills. June-August.

**H. præaltum Vill.** A hawkweed without stolons. Leaves rather glaucous, longer and narrower than in the last and with very few hairs. Flower heads numerous, in a corymbiform panicle. Involucre bracts obtuse, covered, like the peduncles with stellate and glandular hairs.

Here and there on dry hill-sides and mountain slopes. June-August.

**H. florentinum All.** A species closely allied to the last, but sometimes with narrower leaves; flower-heads smaller and in a looser panicle, the branches arched and often rising from the middle of the stem; peduncles with glandular hairs but with few or no stellate ones (Bicknell). Intermediate forms occur.

Beds of mountain torrents, etc., from the coast of les Alpes-Marit. and Liguria to the mountains. May-July.

#### Sub-genus III. ARCHIHIERACIUM Fr.

Bracts of involucre imbricated; achenes larger than in sub-genus **Pilosella**, not crenate; pappus hairs of unequal length; stronger than and not so white as those of **Pilosella**.

**H. lanatum Vill. = H. tomentosum All.** Plant about a foot high, easily known by the felt-like appearance of the leaves, which are covered with a short dense grey tomentum. Root-leaves ovate, acuminate, entire or obscurely sinuate, stalked; stem-leaves sessile, lanceolate amplexicaul. Involucre bracts very woolly, lanceolate-acuminate. Stems bearing several large flower heads.

Limestone rocks and cliffs in the lower mountains. June-August.

**H. andryaloides Vill.** Differs from the last by its toothed leaves, its less dense felt, its longer peduncles, its smaller heads and rather shorter stature. It appears to be less rare in the Var than the last, which only occurs at the summit of les Margès, but in the Maritime Alps this species is not so common.

Rocks and cliffs in the hills and lower mountains. June-August.

**H. cinerascens Fr.** Closely allied to **H. præcox Schultz Bipontinus** but of a more greyish colour. Leaves generally only slightly toothed, somewhat attenuated at the base and with silky hairs. Styles yellow.

Hill-sides and woods. April, May.

**H. præcox Schultz Bipontinus.** Leaves very variable, generally with large teeth or much incised at the base; stem often bearing one petiolate leaf. Flower heads rather large and numerous. Peduncles and involucre bracts very glandular, style usually yellow.

Woods and rocks, occasional. May-July.

**H. fragile Ford.** Stems thick and fragile; petioles long and enlarged at the base, leaves and petioles less hairy than in the last, of which this may be merely a variable form.

Woods and rocks. May-July.

**H. murorum L.** Plant green or glaucous; stem 1-2 ft. high, glabrous or hairy below; root-leaves in a rosette, ovate, acute, cordate or rounded at base, entire or toothed; stem-leaves 0 or very few. Heads 2-6. Peduncles floccose and covered with simple and glandular hairs. Very variable.

Woods and stony slopes, common. April-June.

**H. vulgatum** Fr. Green or glaucous, 1-2 ft. high. Leaves entire, toothed or incised, the radical ones lanceolate, oval or oblong, the stem-leaves 3-10 in number, lanceolate, the lower ones petioled, upper ones sessile. Flower heads in an upright slender panicle. Styles brown or livid.

Woods. June-July.

**H. subalpinum** Arv. T. Plant pale green. Root-leaves ovate-lanceolate, entire or slightly toothed and petioled; stem-leaves 2-4, the lower ones contracted into a narrow petiole, the upper ones sessile and half-amplexicaul. Involucral bracts with whitish scarious borders, and with stellate and glandular hairs. Achenes reddish-brown.

Mountain woods and grassy slopes. June-July.

**H. boreale** Fr. Root-leaves withered at time of flowering. Stem-leaves oval-lanceolate, more or less toothed in lower half; upper ones sessile and half-amplexicaul. Flower heads in a leafy corymb or panicle, on short branches. Involucre ovoid, dark, nearly glabrous; bracts broad, obtuse; styles livid.

Woods and hill-sides. August-September.

Among other Hawkweeds, all belonging to this sub-genus and occurring in the district are: **H. candicans** Tausch., **H. rupicolum** Fr., **H. bifidum** Kit., **H. subcæsius** Fr., **H. prenanthoides** Vill., **H. rigidum** Hartm., **H. umbellatum** L., **H. provinciale** Ford., and **H. amplexicaule** L., besides many others, most of which are found in the higher mountains.

#### AMBROSIACEÆ.

##### XANTHIUM L.

A somewhat anomalous genus often placed in Compositæ. Flowers monœcious; males in globose heads, female heads 2-flowered.

**X. strumarium** L. Broad Burweed. A stout annual, 1-3 ft. high, not spiny. Stems robust, branched, hairy. Leaves green, greyish beneath, ovate-triangular, incised-dentate, cordate at base, long petioled. Fruit ovoid, greenish, covered with hooked bristles, and ending in 2 straight beaks (Plate XIX).

Waste, sandy places and rubbish heaps. July-September.

**X. italicum** Mor., differs from the last by its elliptic fruits, which are larger, with longer bristles and with 2 shortly hooked beaks. Annual of 1-2 ft. in height.

Rubbish heaps, sea-sands, and waste places. July-September.

**X. spinosum** L. Spiny Burweed. A spinous annual 1-2 ft. high. Stem branched from the base, having below the leaves long yellow 3-branched spines. Leaves petioled, soft, white-felted beneath, green with white nerves above, entire or 3-5 lobed, the terminal lobe being lanceolate. Fruit oblong, with slender hooked bristles and ending in 2 straight beaks. Flowers greenish.

Road-sides and waste places. July-September.

**X. macrocarpum** DC., with very large oblong fruit, also occurs in the Var. The glandular fruit is covered with strong, hooked spines.

#### LOBELIACEÆ.

##### LAURENTIA Neck.

**L. Michelii** DC. A very small delicate annual, usually glabrous. Stem delicate, erect, leafy. Leaves oblong-lanceolate, entire or crenate, mostly alternate. Flowers small (4-5 mm.), blue, with whitish throat, solitary at tops of long filiform peduncles. Calyx-teeth linear-lanceolate, about the length of or shorter than the tube. Capsule ovoid. Plant 1-4 in. high.

Damp places and borders of streams in the Var. May-July.



CAMPANULACEÆ.

- Capsule dehiscing within the calyx-lobes. Corolla 5-partite, segments narrow.  
 Flowers capitate ..... JASIONE.  
 Capsule dehiscing at the sides, below the calyx-lobes.  
 Corolla 5-partite, segments narrow. Flowers capitate..... PHYTEUMA.  
 Corolla 5-toothed or lobed. Ovary short, broad..... CAMPANULA.  
 Corolla rotate or campanulate. Ovary long, narrow ..... SPECULARIA.

JASIONE L.

**J. montana** L. Sheep's-bit. Annual or biennial. Stem a foot high, branched from the base. Leaves linear-lanceolate, sessile, wavy. Flowers blue, in dense hemispherical heads, on long peduncles and surrounded by an involucre of broadly ovate bracts. Calyx-tube turbinate.  
 Sandy woods and hill-sides. May-August.

PHYTEUMA L. RAMPION.

**P. orbiculare** L. Round-headed Rampion. Stem 6-18 in. high, erect, often hollow. Lower leaves lanceolate, with a truncate or almost cordate base, stalked crenate-serrate, upper stem-leaves narrower, sessile. Involucral bracts lanceolate, somewhat serrate. Flowers deep blue or sometimes blue-violet, in globular heads an inch in diameter. Stigmas 3.  
 Mountain woods and grassy places in the montane and sub-Alpine region. June-July.

**P. spicatum** L., **P. Charmelii** Vill. and other more truly Alpine species are found in the higher mountains **P. Charmelii** has cordate root-leaves and linear-lanceolate stem-leaves, and is found near Châteaudouble and Aiguines in the Var in June-July. **P. Michelii** All. descends to the lower chestnut zone in the Maritime Alps.

SPECULARIA L.

**S. falcata** A. DC. (Plate XX). An upright annual, rarely branched. Leaves broadly oblong, slightly crenate. Flowers purple, solitary or in pairs in the leaf axils and forming a long spike. Calyx segments linear, as long as the tube and much longer than corolla, often curved like a sickle.  
 Cultivated fields and stony slopes, uncommon. May-June.  
**S. hybrida** A. DC. Corn Campanula. Annual. Stem and branches erect. Leaves oblong with very wavy margins. Flowers terminal, corymbose, small, purple. Calyx segments lanceolate, much shorter than tube, and longer than corolla, upright. Leaves sessile in all 3 species.  
 Sandy or stony fields. May-June.

**S. speculum** A. DC. Venus's Looking-glass. Annual. Leaves oblong, lower ones somewhat crenate. Flowers purple, large, in panicles at end of stem and branches. Calyx segment linear, as long as the tube and the corolla.  
 Cultivated fields and crops, common. April-July.

CAMPANULA L.

**C. Medium** L. = **C. grandiflora** Lam. Biennial, 1-2 ft. high. Leaves oval-lanceolate toothed, rough; root-leaves petioled. Flowers very large, with shallow lobes, axillary, in rather long spikes, bluish-violet. Calyx hispid, having 5 reflexed appendages as long as the tube. Stigmas 5.  
 Wooded slopes and ravines in the hills. May-July.  
**C. glomerata** L. Clustered Campanula. Of variable size and habit, erect, usually hairy, but sometimes glabrescent. Lower leaves oval, oblong or lanceolate, cordate at base, petioled, crenate. Flowers purplish-blue, sessile, in dense heads, furnished with large leafy bracts. Calyx hairy, lobes lanceolate-acute.  
 Wooded slopes in the mountains and hill-sides. June-August.

**C. petraea** L. Plant erect, covered with down. Leaves and calyx white-felted beneath. Flowers yellowish-white almost sessile, in heads with large leafy bracts. Lower leaves ovate or oblong, cordate at base, long petioled.

Rocks in the Maritime Alps, rare. July-August.

**C. Rapunculus** L. Rampion Campanula. Biennial, 1-3 ft. high, stems wiry, erect. Lower leaves oblong, crenate petioled; upper leaves linear-lanceolate. Calyx segments linear-setaceous. Flowers rather small, pale blue or nearly white (as e.g. about Hyères), erect on long narrow spikes.

Woods, road-sides, and thickets, common. May-July.

**C. persicifolia** L. Plant glabrous and shining, about 2 ft. high. Leaves leathery, radical ones sessile, spatulate-lanceolate; cauline ones linear-oblong finely serrate. Calyx segments triangular-lanceolate, acute. Flowers large, 2-6 in a simple head, blue or rarely white.

Mountain woods as at La Sainte-Baume, Solliès-Toucas, St. Martin Vésubie, etc. May-August.

**C. patula** L. Spreading Campanula. An erect slender biennial, about a foot high, slightly hairy, with spreading branches. Root-leaves obovate or oblong, stalked; stem-leaves few, lanceolate or linear, almost entire. Flowers few, rather larger than in **C. rotundifolia**, in a spreading panicle; corolla more open and more purplish in colour and divided to the middle.

Bushy pastures and thickets in the lower Maritime Alps. May-July.

**C. rotundifolia** L. Harebell. A slender perennial, with heart-shaped root-leaves which usually die away at flowering time; stem-leaves linear or lanceolate, entire. Corolla bell-shaped, with five broad lobes shorter than the tube, very variable in size and sometimes in shape, in a branched loose panicle.

Stony hill-sides and dry thickets in the mountains; scarce in the south. May-July.

**C. macrorrhiza** ♀. Gay. A very variable species resembling the Harebell, but known by its woody root-stock, its broad lower stem-leaves, and its upright buds and capsules; and the calyx-teeth are very often reflexed.

Cliffs and rocks chiefly in the mountain region, and very rare in the Var. May-August.

**C. Erinus** L. A small annual weed. Leaves ovate-oblong, obtuse, toothed. Corolla scarcely longer than the calyx, very small, almost sessile, blue or rarely white.

Rocks, old walls, sandy road-sides, and waste places, common near the coast and in the Olive region. April-June.

**C. Trachelium** L. Nettle-leaved Campanula. Another variable species, 2-3 ft. high, sometimes approaching in appearance small specimens of **C. latifolia**, which is found in the Maritime Alps. Lower leaves on long stalks, cordate and coarsely toothed; upper ones small and ovate-lanceolate. Flowers large, 2 or 3 together in short leafy racemes in the upper axils. Calyx segments stiffly hairy.

Shady places in the mountain region and sometimes in valleys near the coast. June-August.

**C. rapunculoides** L. Creeping Campanula. Root-stock creeping. Stem erect, 1-3 ft. high. Lower leaves on long stalks, heart-shaped, upper ones small, ovate-lanceolate. Flowers drooping, smaller than in **C. Trachelium** and more purplish-blue, forming very long terminal and often unilateral racemes. Capsules nearly globular. Calyx-teeth linear or linear-lanceolate.

Fields, banks, and uncultivated places. June-August.

**C. bononiensis** L. (Plate XX). A tall spiky species with very leafy and almost tomentose stem. Leaves very downy beneath, lower ones shortly stalked, cordate; upper ones sessile and becoming narrower. Flowers small, violet-blue, very shortly stalked, in clusters at junction of the bracts and stem,







PLATE XXI.

1. Nerium Oleander.      2. Olea europæa.      3. Vinca acutiflora.  
 4. Phillyrea angustifolia (in fruit).      5. Jasminum fruticans.

and forming a long spike. Sepals linear-lanceolate, spreading. Capsule pendent.

Mountain woods and grassy places of the chestnut zone of the Maritime Alps. Very rare in the Var. June-July.

**C. latifolia** L. (Giant Campanula), **C. spicata** L. (flowers small, in a long dense spike, leaves long and hairy), and **C. linifolia** Lamk. are sometimes found in the lower Maritime Alps, but the common alpine **C. pusilla** does not seem to descend to such low elevations in the south as it does in central Europe.

## VACCINIÆ.

Corolla campanulate, urceolate or rotate. Fruit a berry.....VACCINIUM.

## VACCINIUM L.

**V. Myrtillus** L. Whortleberry or Bilberry. A small glabrous shrub, 6-18 inch high, with many erect or spreading green branches. Leaves deciduous, ovate, barely an inch long, finely toothed and very shortly stalked. Flowers greenish white or pinkish, nearly globular. Berry globular, nearly black and covered with a glaucous bloom.

Mountain woods, but rare in the Var. May.

## ERICACEÆ.

Tribe I. ARBUTEÆ. Buds naked. Corolla deciduous. Fruit a berry or drupe.

Ovary cells many ovuled .....ARBUTUS.

Ovary cells 1-ovuled .....ARCTOSTAPHYLOS.

Tribe II. ERICINEÆ. Buds naked. Leaves small. Flowers 4-merous. Corolla persistent. Anthers cohering in bud.

Corolla 4 fid. Capsule loculicidal, cells many-seeded .....ERICA.

Corolla 4-partite. Capsule septicidal, cells few-seeded .....CALLUNA.

Tribe III. PYROLEÆ. Herbs. Leaves chiefly radical. Petals 5, free or connate, concave. Capsule loculicidal .....PYROLA.

## ARBUTUS L.

**Arbutus Unedo** L. Strawberry-tree (Plate XX). An evergreen shrub or small tree, mostly glabrous. Leaves shortly stalked, ovate or oblong-lanceolate, toothed, shining on upper side. Flowers in small, drooping terminal panicles, greenish-white, often tinged with pink. Berry yellow and then red, globular, granulated, dry and without flavour.

Woods and hill-sides; common on the littoral, especially on siliceous soil. September-November. An insect sometimes makes the leaves silvery.

## ARCTOSTAPHYLOS Adans.

**A. Uva-ursi** Spreng. Bearberry. A small, much-branched shrub. Leaves evergreen, glossy above, with sunken dots (brown glands) beneath, usually entire, leathery, net-veined. Flowers white or pale pink, in compact, drooping, terminal racemes. Berries globular, bright red, smooth and shining.

Mountain woods in the north of the Var and in the Maritime Alps. April-June.

## ERICA L. HEATH.

**E. arborea** L. Tree-heath. Shrub, 3-12 ft. high. Stems much branched, whitish and woolly when young. Leaves in whorls of 3-4, narrow-linear with 1 furrow. Flowers small, white or very pale pink, sweet scented. Stamens included in corolla tube. Trunk woody and sometimes quite thick.

Woods and thickets; common in the littoral on siliceous soil; and extending in Liguria up to about 4000 ft., as e.g. above Bajardo behind Bordighera. March-May.

In 1913 it was in flower by 22 February near Carqueiranne, but this Heath remains a very long while in the bud state, when it is sometimes gathered to open in water. The roots are used to make "briar" pipes (a corruption of the word *bruyère*). See Plate XXV.

**E. scoparia** L. Shrub, 2-4 ft. high, with glabrous branches. Leaves in whorls of 3-4, linear-obtuse, 2-ridged. Flowers very small and numerous, greenish-yellow, in long narrow spikes. Stamens included in corolla tube.

Woods and arid hill-sides near the littoral. April-May.

**E. multiflora** L. Under-shrub about 2-3 ft. high, glabrous. Leaves in whorls of 4-6, linear-obtuse, with one furrow, glabrous and thick. Flowers pink, in compact terminal heads. Anthers prominent. Calyx lobes oblong lanceolate, glabrous, almost half length of corolla which is well shaped and 5 mm. long.

Woods and hill-sides west of Toulon, as at St. Cyr, Bandol, etc. Rare near Villefranche and in the Magnan Valley near Nice. September-November. This Heath, common near Marseilles, must not be confused with **E. mediterranea** L. which does not grow on the Riviera, but farther west.

#### CALLUNA *Salisbury*. LING OR HEATHER.

**C. vulgaris** *Salis.* = **Erica vulgaris** L. = **C. Erica** DC. A small straggling shrub. Leaves acicular, very small and short. Flowers pink or slightly white. Stamens with anthers dorsally fixed. Calyx coloured like the corolla, with 4 small bracts at the base.

Woods and dry heaths on siliceous soil. July-October.

#### PYROLA L. WINTER-GREEN.

**P. chlorantha** *Swartz.* Somewhat like **P. rotundifolia** L. (which grows in the Maritime Alps) but with the long style more curved and reflexed. Root-leaves orbicular, rounded at top, sometimes almost truncate at base, slightly toothed, long-petioled. Inflorescence loose, 5-7 flowered. Flowers large, greenish-white. Sepals ovate, acuminate, very short.

Mountain woods and rocks. June-July. Very rare and perhaps only recorded from a pine-wood near Vêrignon in the Var, and from near Breil.

**P. secunda** L. Serrated Winter-green. Raceme unilateral. Style long and nearly straight. Leaves ovate, acute, toothed and prominently veined. Flowers small, greenish-white. A very distinct species.

Mountain woods (rare) in the north of the Var, and in the Maritime Alps. June-July.

**P. minor** and **P. uniflora** are found only in the Alpine and sub-Alpine parts of the Maritime Alps.

#### MONOTROPACEÆ.

#### MONOTROPA L.

**M. Hypopitys** L. = **Hypopitys multiflora** *Scop.* Bird's Nest. Stem 6-9 in. high, with scales instead of leaves. Flowers few, in a short terminal raceme. Sepals and petals ovate or oblong, glabrous or slightly downy within. Whole plant of a yellowish-brown, turning black on drying. Parasitical upon the roots of trees, especially Beech, though in the south it is found mostly on Oaks and Firs. It is very rare in the French Riviera district, and in the Var the only form found, near Toulon and Le Luc, is the sub-species **hypophega** *Don.* The type plant occurs here and there in dry pine-woods above Bordighera, as near Bajardo.



PRIMULACEÆ.

Tribe I. PRIMULÆ. Ovary superior. Capsule valvular. Hilum ventral.  
 Leaves radical. Corolla lobes entire. Flowers small .....ANDROSACE.  
 Leaves radical. Corolla lobes emarginate, incurved or spreading .....PRIMULA.  
 Leaves radical. Corolla lobes reflexed, red.....CYCLAMEN.  
 Leaves cauline. Corolla rotate, yellow .....LYSIMACHIA.  
 Leaves linear. Corolla irregular, purple. Calyx membranous .....CORIS.  
 Leaves opposite, lanceolate. Corolla minute .....ASTEROLINUM.

Tribe II. ANAGALLIDEÆ. Ovary superior. Capsule opening transversely.  
 Hilum ventral.  
 Calyx 4-partite. Filaments glabrous .....CENTUNCULUS.  
 Calyx 5-partite. Filaments villous .....ANAGALLIS.

Tribe III. SAMOLEÆ. Ovary inferior. Capsule valvular. Hilum basal.  
 SAMOLUS.

ANDROSACE L.

**A. Chaixii** G. G. = **A. lactiflora** Pall. Leaves oblong-lanceolate, slightly toothed, in a rosette. Calyx glabrous, larger at maturity, shorter than corolla. Flowers pink, forming a loose umbel on long slender radical pedicels. Central flower-stalk erect, the others spreading. Plant 4-8 in. high. Biennial or annual.

Mountain woods and pastures, uncommon. April-June.

**A. maxima** L. An annual species 2-4 in. high. Leaves in a radical rosette, obovate wedge-shaped, toothed at the top. Scape short, bearing a loose umbel of white or pinkish flowers. Calyx large, downy and becoming larger at maturity, lobes ovate-lanceolate, longer than the tube. Corolla and capsule shorter than the calyx.

Fields and crops in the hill district, especially on limestone, as e.g. the Sainte-Baume region. April-June. Uncommon.

PRIMULA L.

**P. vulgaris** Huds. = **P. grandiflora** Lamk. Primrose. The common primrose is found in several places in the north of the Var. In Liguria and les Alpes-Marit. it is quite common on banks, damp woods, and shady hill-sides in the chestnut zone up to about 1200 m. and descending the valleys to near the sea. February-May.

**P. suaveolens** Bert. This is the variety of the Cowslip (**P. veris** L.) found on grassy banks and damp woods from about 600 to 1700 m. and occasionally descending near the coast (C. Bicknell). The leaves are generally more cordate and less rugose than in the type, and the under surface is whiter and tomentose and the petioles less winged. The flowers are often larger and the calyx more inflated. March-May. The true Cowslip does not appear.

**P. marginata** Curt. (Plate XX). Stem 2-6 in. high, fleshy, bearing a few-flowered umbel of rather large rose-purple flowers. Leaves smooth, thick, ovate-elliptical and narrowed into a petiole, and with a cartilaginous, serrate, mealy-white margin. Petals obcordate. Capsule subglobular. A rather variable plant according to position, etc.

Rocky, limestone places in the mountains, descending to about 800 m. near San Dalmazzo di Tenda and Buggio in Liguria, to the mountains above Menton, and the west of the montagne de Brouis in the Var.

**P. Allionii** Lois. A small species 2 in. high, pubescent and viscous. Scape much shorter than the leaves, and bearing a solitary bright rose flower. Leaves obovate, petioled, entire or crenate, velvety and very viscous.

Rocks in the sub-Alpine region of the Maritime Alps (endemic) and descending to the gorge of Saorge below San Dalmazzo di Tenda. March-May.

## CYCLAMEN L.

**C. repandum** *Sibth. et Sm.* Root a tuber about 2-3 cm. across. Leaves large, thin, ovate-triangular, irregularly incised and mucronate, cordate at base with open sinus. Corolla violet-rose with darker throat; corolla lobes 5 times length of tube.

Woods and thickets in the Var, extremely rare. March-May.

## ASTEROLINUM L.

**A. stellatum** *Hoffm. et Lk.* A minute, slender, glabrous annual. Leaves linear-lanceolate, frosted over with minute stars. Flowers very minute, white, on short axillary peduncles and much shorter than the calyx.

Dry, sandy places on the littoral, fairly common. March-May.

## CORIS L.

**C. monspeliensis** L. (Plate XX). Biennial, about 8 in. high and bushy. Leaves linear, sessile, small, rather fleshy and glabrous. Stems very leafy and ligneous at base. Flowers deep rose-lilac or pale purple, subsessile, in compact heads. Calyx bell-shaped, membranous and inflated, usually a deep reddish-purple colour; with irregular double margin, the outer teeth being linear and spiny and the 5 inner ones triangular. Corolla tubular, with 5 unequal bifid lobes, the 2 front lobes much shorter than the other. Stamens 5, unequal.

Dry, stony hill-sides on the littoral, especially on limestone. April-June.

Like the Tree-heath this plant remains a long time in bud. In 1913 the writer found *Coris* with bright rose-pink blossoms by the road to the Sainte-Baume chain at about 1200 ft.

## LYSIMACHIA L.

**L. vulgaris** L. "Yellow Loosestrife." Stem erect, branched, 2-3 ft. high, rather downy. Leaves often in whorls of 3 or 4, broadly lanceolate or nearly ovate-acute. Flowers yellow, rather campanulate, in short, compound racemes at the summits of the branches, forming a terminal leafy panicle. Stamens connected at base into a cup enclosing the ovary.

Borders of streams, etc., on the littoral, uncommon. June-August.

**L. Nummularia** L. Money-wort. Stems prostrate and creeping, often rooting at the nodes. Leaves opposite, broadly ovate, usually obtuse and shortly stalked. Flowers yellow, large, on axillary peduncles. Stamens erect in the centre, with the filaments slightly connected at the base.

Moist meadows and river-sides on the littoral and hilly districts, rare. June-July.

## CENTUNCULUS L.

**C. minimus** L. Chaffweed. A minute annual, often less than 1 in. high, branched only at the base. Leaves ovate, very small. Flowers almost sessile, shorter than the leaves. Calyx-teeth linear. Corolla pink, very minute. Capsule opening transversely.

Moist sandy shady places flooded in winter. May-July. Found occasionally in the Var near Fréjus, Bormes, etc.

## ANAGALLIS L.

**A. arvensis** L. Scarlet Pimpernel. Common in cultivated and waste places. April-November.

The following varieties occur:—

Var.  $\alpha$  **phœnicea** = **A. phœnicea** *Lam.* with red or flesh-coloured flowers.

Var.  $\beta$  **cærulea** = **A. cærulea** *Schreb.* with blue flowers.

Some botanists consider them distinct species,  $\beta$  having more pointed leaves, shorter peduncles and the lobes of the corolla not at all or only slightly grandular; but Mr. Bicknell says he was unable to detect any differences at all in the larger number of plants examined.



1



2



3



4

PLATE XXII.

1. *Hyoscyamus albus*.  
3. *Anchusa italica*.

2. *Cerinthe aspera*.  
4. *Lithospermum purpureo-ceruleum*.





**A. parviflora** Hoffm. et Lk. = var. **micrantha** G. G. This may be only a small-flowered variety of the common Pimpernel. Corolla only 4-6 mm., about equal to the calyx, wheel-shaped, blue or rose. Leaves ovate, often erect, rounded and clasping at the base.

Damp, sandy places near the sea, as e.g. below Hyères. May-July.

**A. tenella** L. Bog Pimpernel. A small, slender, creeping species, a few inches long, with small, sub-orbicular, opposite leaves. Flowers pale pink, very elegant, on long slender peduncles. Corolla campanulate, of delicate texture and deeply 5-cleft. Stamens with woolly filaments.

Wet, spongy ground and borders of streams from the coast to about 700 m., local. May-July.

### SAMOLUS L.

**S. Valerandi** L. Brookweed. A glabrous, bright green plant, 3-10 in. high, with obovate spreading root-leaves. Stem slightly branched, with a few oblong leaves and loose racemes of small white flowers. Pedicels rather long, with a green bract above the middle. Capsule small, globular. Calyx-teeth short and broad.

Damp places, marshes near the sea, etc., common on the littoral and on the lower mountain region. May-August. Perhaps few flowering plants have been seen by the writer in such a variety of habitats as this, but the plant is widely diffused throughout the world. Near Beau Rivage in the Var it grows on the low sea cliffs where fresh water sometimes trickles on to the beach below. In the Alps and Pyrenees we have seen it on damp rocks at considerable elevation.

### STYRACACEÆ.

#### STYRAX L.

**S. officinalis** L. An ornamental shrub or small tree, 6-24 ft. high. Leaves alternate, deciduous, petioled, ovate obtuse entire, green and glabrescent above, white tomentose beneath. Flowers creamy-white, 3-6 in little corymbs. Calyx tomentose, truncate and almost entire or with 5 little teeth. Corolla large, campanulate, with very short tube and 5-7 lanceolate lobes. About 12 stamens inserted at base of corolla. Fruit leathery or fleshy, ovoid, cotton-felted.

Woods and hill-sides in Southern Var where it reaches its Western limit in Europe. April-May. Good specimens of this interesting plant can be seen on the lower slopes of Coudon and in the neighbouring district of Solliès-Toucas, La Farlède, etc. There is a tree on the road-side which mounts from Solliès Pont to the picturesque old hill-town of Solliès-Ville. All these villages are worth visiting for their architectural beauty.

### OLEACEÆ.

Corolla funnel-shaped, 5-lobed, stamens inserted. Fruit 2-celled.....JASMINUM.

Corolla funnel-shaped, 4-lobed, stamens inserted on throat .....LIGUSTRUM.

Corolla-tube short, stamens exserted. Fruit a fleshy drupe, with hard stone.

OLEA.

Corolla-tube short, stamens inserted at base of corolla. Fruit a soft drupe with no stone.....PHILLYREA.

#### JASMINUM L.

**J. fruticans** L., Yellow Jasmine (Plate XXI). An under-shrub of 1-4 ft. Leaves alternate, petioled, simple, dark green, shining, or more often with 3 oblong, obtuse leaflets on a short stalk. Flowers yellow, scented, shortly peduncled, 1-4 at the top of the branches. Berry globular, black and shining.

Road-side, hedges, and fields and wooded slopes throughout the littoral of the Var and here and there as far as the Italian frontier. April-May.

**J. officinale** L. The sweet-scented white Jasmine, so often cultivated, is a native of Persia and India, but it is occasionally found subsponaneous in rocks and hedges.

## LIGUSTRUM L.

**L. vulgare** L. Privet. This well-known shrub with opposite, entire, glabrous leaves, white sweet-scented flowers in thick clusters and blue-black globular berries is occasional in shady places by streams and in hedges and thickets, flowering in May and June.

A larger species, which the French call Troëne, is a small tree frequently planted in avenues and gardens on the Côte d'Azur.

## OLEA L.

**O. europæa** L. Olive (Plate XXI). A small tree of 8-30 ft. high, with greyish-green branches, which in the wild state are spinescent, and with very small berries. Leaves oblong or ovate-lanceolate entire, glabrous leathery, whitish-drab coloured underneath. Flowers in axillary clusters, very small, cream coloured. Fruit a fleshy drupe, ellipsoid, green at first and then black. The leaves of young shoots springing up from the ground near the parent plant are generally smaller and oval in shape. These shoots are very curious.

Cultivated in many places from the coast to about 800 m. in warm situations, and often seen naturalized. May-June.

## PHILLYREA L.

**P. angustifolia** L. (Plate XXI). A variable shrub, 3-6 ft. high. Leaves linear-lanceolate, or lanceolate-acute, entire, with a transparent narrow border, very shortly petioled. Flowers in axillary rounded clusters, small, whitish. Drupe small, 3-5 mm., prune coloured, globular and apiculate.

Very common in hedges, woods, and hill-sides throughout the littoral. March-May; and occasionally, as in 1913, in February.

**P. latifolia** L. A shrub or small tree attaining 20-25 ft. high, with robust branches. Lower leaves broad, ovate or broadly oblong, slightly cordate at base and shortly petioled, toothed; the upper ones narrower and more finely toothed, with prominent dorsal nerve. Flowers as in the former species. Fruit larger, obtuse and not apiculate.

Woods and stony valleys in the littoral, much less common than the last. March-May.

**P. media** L. is also much less common, but equally variable. In fact it seems to be an intermediate form with oblong lanceolate leaves, finely toothed (var. *serrata* *Albert*) or almost entire (var. *integrifolia* *Albert*).

Dry hill-sides, rocks and woods on the littoral. March-May.

**Syringa officinalis** L. Common Lilac. This well-known tree, introduced into gardens from Eastern Europe, is sometimes seen more or less naturalized near houses, as in England.

## APOCYNACEÆ.

Throat of corolla naked. Flowers usually blue .....VINCA.

Throat of corolla furnished with 5 multifid scales. Showy shrubs .....NERIUM.

## VINCA L. PERIWINKLE.

**V. minor** L. Lesser Periwinkle. Leaves ovate or oblong, glabrous, entire. Peduncles as long as the leaves. Calyx segments glabrous, much shorter than corolla-tube. Lobes of corolla truncate. Flowers blue, or more rarely white or purple.

Banks under hedges, borders of streams, etc. February-May.

**V. media** *Hoffm. et Lk.* = **V. acutiflora** *Bert.* (Plate XXI). Leaves ovate-lanceolate, glabrous, entire. Peduncles shorter than the leaves. Calyx segments glabrous, shorter than corolla-tube. Corolla lobes obliquely acuminate. Flowers large, very pale blue or white. In April and May they appear in great quantities.

Borders of streams and hedges, Common on the littoral. December-May.



**V. major** *L.* Greater Periwinkle. Leaves often heart-shaped, or broadly ovate, glabrous and shining, but bordered by minute hairs. Peduncles shorter than the leaves. Calyx segments ciliate, as long as the corolla; corolla very large, blue, the tube broad. Corolla lobes broad, and almost angular.

Borders of streams and shady places. February-May.

### NERIUM *L.*

**N. Oleander** *L.* Oleander (Plate XXI). A shrub 3-8 ft. high. Leaves lanceolate, leathery, entire, usually in whorls of three. Flower, large and handsome, deep rose or rarely white or pale pink.

Wooded valleys, ravines and borders of streams, local. June-September.

### ASCLEPIADACEÆ.

Fruit a long, narrow, smooth follicle .....VINCETOXICUM.

Fruit a shorter follicle, more swollen and spreading .....CYNANCHUM.

Fruit ovoid, acuminate, inflated, covered with soft spines. ....GOMPHOCARPUS

### VINCETOXICUM *Mæsch.*

**V. officinale** *Mæsch.* (*Cynanchum Vincetoxicum* *R. Br.*). A rather shrubby or straggling plant, 1 to nearly 3 ft. high, finely pubescent, with creeping root-stock. Leaves opposite, entire, shortly petioled, the middle ones cordate-ovate. Flowers small, dirty white or yellowish, in axillary petioled clusters. Follicles glabrous, very large (1½-2 in.) cylindric-acuminate, swollen towards base, and when ripe showing beautiful silky seeds.

Stony hills, thickets, etc., common. May-July.

### GOMPHOCARPUS *R. Br.*

**G. fruticosus** *R. Br.* (*Asclepias fruticosa* *L.*). Under-shrub, 3-6 ft. high, with linear-lanceolate leaves whose borders are rolled in downwards. Flowers in umbels, white. Fruit ovate-acuminate, very hispid.

Naturalized here and there near the coast. Originally from Corsica, Italy, N. Africa.

### GENTIANACEÆ.

Corolla rotate. Stamens 6-8. Leaves perfoliate .....CHLORA.

Corolla salver-shaped. Stamens 4. Stigma 2-lamellate .....CICENDIA.

Corolla funnel-shaped. Stamens 5. Anthers twisted .....ERYTHRÆA.

Corolla-tube subclavate. Anthers straight. Stigmas 2.....GENTIANA.

Corolla induplicate. Leaves orbicular, floating, alternate .....LIMNANTHEMUM.

### ERYTHRÆA *Rich.*

**E. Centaurium** *Pers.* Common Erythræa or Centaury. Biennial, erect, 2-12 in. high, usually much branched in upper part. Lower leaves broadly ovate, in a spreading tuft; upper ones in distant pairs, variable in shape. Flowers bright pink, in a terminal, much-forked cyme or panicle. Corolla-tube slender, limb spreading 5-cleft.

Woods, fields, and grassy places, common. June-August.

**E. pulchella** *Fr.* A smaller and often much-branched annual. Leaves oval or oblong-lanceolate, radical, few. Cymes lax-flowered; flowers pink, all pedicelled, corolla tube longer than calyx.

Sandy ground and damp, grassy places. May-September.

**E. spicata** *Pers.* Annual. Leaves elliptic-oblong. Flowers sessile, arranged in a long spike on the branches. Corolla lobes lanceolate rose.

Damp, grassy places. May-September.

**E. latifolia** *Sm.*, with broad leaves, and **E. grandiflora** *Biv.* with larger, deep rose flowers and narrow, truncate, revolute leaves are occasionally seen in the Var. Biennial.

**E. maritima Pers.** Flowers yellow. Leaves ovate or oblong. Style divided to the middle. Annual.

Sandy woods throughout the littoral. April-June.

#### CICENDIA Adans.

**C. filiformis Delarbre (Microcala filiformis Hoffm.).** A minute annual 2-3 in. high, with a few pairs of small narrow leaves and rather simple and 1-flowered, or divided into 2 or 3 branches each with a small yellow flower. Calyx campanulate, with 4 broad, short lobes. Corolla 4-cleft. Capsule globular, 1-celled.

Damp, grassy, or sandy places, rather rare. May-July.

**C. pusilla Griseb. (Exacum pusillum DC.).** A still smaller slender annual, much more branched and differing chiefly by its yellowish-white flowers, with calyx divided to the base into narrow segments instead of into short broad teeth.

Damp places, borders of lakes, etc., rare. Ste. Raphael. May-July.

#### CHLORA L.

**C. perfoliata L.** Perfoliate Yellow-wort. An erect, stiff, glaucous glabrous annual, 3-12 in. high. Stem-leaves in pairs, so that the stem appears to pass through them. Flowers bright yellow, in rather loose terminal cymes. Corolla nearly rotate.

Woods and grassy hills. May-September.

**C. serotina K.** An erect glaucous annual with ovate leaves rounded at the base, and yellow flowers. Calyx lobes obscurely 3-nerved, linear-lanceolate, divided nearly to base.

Woods and damp, sandy places. May-July.

**C. imperfoliata L.** A more slender glaucous annual, with oblong-lanceolate leaves. Calyx lobes plainly 3-nerved, lanceolate-acuminate, divided two-thirds down.

Damp, grassy places. May-August.

#### GENTIANA L.

The only gentians found in the Var are **G. lutea L.**, **G. cruciata L.**, and **G. verna L.**; but the two last are extremely rare, and probably no species descends to within the altitudinal limits of this work either in the Var or les Alpes-Marit. Perhaps **G. cruciata** and **G. excisa Presl.** descend lowest (to about 800 m.) in the whole region.

#### LIMNANTHEMUM.

**L. peltatum Gmel. (Villarsia nymphoides Vent.).** An aquatic plant with long creeping stems rooting at the base and bearing a single leaf at each upper branch, and a terminal tuft of leaves and peduncles. Leaves deeply cordate, like those of a small water-lily. Each peduncle has a rather large yellow flower.

Ditches and slowly running water, rare. June-August.

Near Toulon, La Garde, and Le Pradet.

#### CONVOLVULACEÆ.

Corolla campanulate, plaited in bud, entire, style 1 ..... CONVULVULUS.

Corolla funnel-shaped, small, 5-lobed, styles 2, capsule 2-valved ..... CRESSA.

Leafless parasites. Corolla imbricate in bud, very small ..... CUSCUTA.

#### CONVOLVULUS L.

**C. Soldanella L. (Calystegia Soldanella R. Br.).** Sea Convolvulus. Root-stock creeping. Stems short, prostrate. Leaves small, thick, broadly rounded or kidney-shaped, with rounded or angular basal lobes. Peduncles 1-flowered. Corolla very large, pink and handsome.

Sea-sands. May-July.

**C. seplum** *L.* (Greater Bindweed) with very large white or rarely pale pink flowers is fairly common in hedges and thickets. June-July.

**C. arvensis** *L.* (Lesser Bindweed) with small pink or white flowers is abundant, and flowers from May-July.

**C. hirsutus** *Steud.* Plant climbing and covered with yellowish spreading hairs. Leaves hastate or sagittate, slightly sinuate, petioled. Flowers yellowish or whitish, solitary or in pairs on the thick axillary peduncles. Bracts linear, far from the flowers.

Fields and hedge banks, local. May-June.

**C. althæoides** *L.* Plant ascending, but hardly climbing; covered with spreading hairs. Upper leaves multifid, with narrow segments, the terminal segment being largest; lower leaves ovate-cordate, obtusely crenate or lobed. Flowers pink, deeper at the throat. Bracts setaceous, distant from the flower. The bracts enveloping the buds are sometimes nearly black.

Common at borders of fields and roads, and on hill-sides on the littoral. April-June.

**C. lanuginosus** *Desr.* (**C. linearis** *DC.*). A very hairy silvery species, with ligneous root-stock. Stem erect, leafy. Leaves small, linear or linear-lanceolate, silky, 1-nerved and silvery in colour. Flowers rose, rather small, subsessile, in heads surrounded by a kind of leafy involucre.

Dry-stony places in the hills, uncommon. May-July. It can be found at about 2000 ft. on the west side of the Col de Bretagne, chaîne de la Sainte-Baume.

**C. cantabrica** *L.* A hairy green non-climbing species with ligneous root-stock. Leaves linear-lanceolate, often silky. Bracts linear, at the axils of the branches. Flowers rose, in small cymes at the top of the long peduncles.

Common in stony places and borders of fields except in the mountain district. May-July.

**C. tricolor** *L.* Annual. Hairy above, bright green, stem nearly prostrate. Leaves sessile, oblong-lanceolate or obovate, veined, ciliate at base. Flowers blue at the rim, then white, with yellow centre, and a spot of deep purple at the throat. Bracts 2, linear.

Crops and uncultivated places, perhaps native. April-June.

**C. Siculus** *L.* Annual. Hairy, pale green. Stem flexuous, often prostrate. Leaves ovate-acute, almost truncate or cordate at base, shortly petioled. Flowers blue, small, axillary, solitary on peduncles shorter than the leaves and finally reflexed. Bracts linear-lanceolate, near the flower, often longer than the calyx. Calyx lobes ovate-acuminate, ciliate. Styles 2.

Rocky hill-sides and screes, rare. April-May.

### CRESSA *L.*

**C. cretica** *L.* A small greyish-green, hairy plant, much branched and very leafy. Leaves small, ovate-lanceolate, acute, entire, 1-nerved, sessile, the stem-leaves cordate at base. Flowers whitish-pink or yellow, small, subsessile, in close heads at the top of the branches. Corolla funnel-shaped with 5 deep ovate-acute lobes. Stamens 5, prominent. Styles 2.

Damp, sandy places and dried up ditches near the sea, rare. August-September. It is found in all five Continents, but nearly reaches its Northern limit here.

### CUSCUTA *L.* DODDER.

**C. epithymum** *Murr.* Lesser Dodder. A climbing, parasitic plant with thread-like stems which are often red. Flowers very small and waxy, pale pink or white, in compact, globular heads. Corolla-lobes pointed and spreading. Parasitical upon Thyme, Heath and many other shrubby plants.

Dry places chiefly on the littoral. June-August.



*C. alba* Presl. and *C. Trifolii* Bab. are also found. The latter is sometimes in great quantity in Clover and Lucerne fields. Very probably other species of *Cuscuta* may occur on the French Riviera and especially in the hill districts, but the flowers are so minute that the different species are not easily distinguished.

### BORAGINACEÆ.

Tribe I. CERINTHEÆ. Carpels 2, 2-celled, fixed on the receptacle. Corolla tubular, throat naked ..... CERINTHE.

Tribe II. ANCHUSEÆ. Corolla regular; throat closed with scales. Nutlets inserted by broad cup-shaped bases on the flat receptacle. Carpels 4.  
 Corolla rotate. Anthers exserted, conniving in a cone ..... BORAGO.  
 Corolla salver-shaped. Anthers included ..... ANCHUSA.  
 Corolla with slightly bent tube, and rather oblique spreading limb ..... LYCOPSIS.  
 Corolla tubular, with 5 narrow scales at throat. Anthers included. SYMPHYTUM.

Tribe III. LITHOSPERMEÆ. Corolla usually regular; throat naked or closed by scales. Nutlets inserted by small flat bases to the flat receptacle.  
 Corolla funnel-shaped, calyx-tube 0. Stamens included. Nutlets stony ..... LITHOSPERMUM.  
 Corolla tubular cylindric, with 5 equal teeth ..... ONOSMA.  
 Corolla obliquely truncate, with 5 unequal teeth, irregular ..... ECHIUM.  
 Corolla funnel-shaped, with 5 little transverse scales at the throat ..... ALCANNA.  
 Corolla-tube long, funnel-shaped. Stamens included. Nutlets smooth ..... PULMONARIA.  
 Corolla salver-shaped. Calyx bell-shaped. Nutlets smooth ..... MYOSOTIS.

Tribe IV. CYNOGLOSSEÆ. Corolla regular; throat naked or closed with scales. Nutlets inserted by broad ventral surfaces on an elevated receptacle.  
 Corolla funnel-shaped. Nutlets with hooked bristles ..... CYNOGLOSSUM.  
 Corolla rotate, with very short tube ..... OMPHALODES.  
 Corolla minute. Calyx-lobes leafy. Nutlets granulate ..... ASPERUGO.  
 Corolla salver-shaped. Nutlets with hooked bristles at the edges only ..... ECHINOSPERMUM.  
 Corolla-lobes separated by a longitudinal fold and often by a small tooth ..... HELIOTROPIMUM.

### CERINTHE L.

*C. aspera* Roth. (*C. major* Lam.) (Plate XXII). Leaves oval, auricled, very rough, ciliated, often spotted. Corolla naked at the throat, with 5 short teeth which are acuminate and reflexed. Anthers as long as the filaments. Flowers rather large, yellow, with a dark crimson ring at base. Upper bracts often beautifully coloured.

Borders of fields and stony places. March-May.

*C. minor* L. Leaves oblong, auricled, not ciliate. Corolla lobes linear, very acute, connivent. Anthers 4 times as long as the filaments. Flowers smaller, yellow, with a scarlet band at base.

Woods and thickets in the lower mountains. May-July.

### BORAGO L.

*B. officinalis* L. Common Borage. A stout, rough, and yet elegant plant a foot or more high. Lower leaves obovate or oblong, narrowed into long stalks; upper ones narrower and more shortly stalked. Flowers on long pedicels, drooping, of a very bright clear blue (perhaps the bluest colour of any flower); anthers dark and very prominent.

Fields and road-sides, very common. March-July. In 1913 it was in bloom on 3 February, near Hyères.

## SYMPHYTUM L. COMFREY

**S. officinale** L. Common Comfrey. Stems stout, 2-3 ft. high. Leaves, large, broadly lanceolate, tapering to a long point and rough with short stiff hairs. Flowers in cymes forming one-sided racemes, pale yellow or dull purple. Borders of ditches and damp, shady places. May-July.

**S. tuberosum** L. Tuberous Comfrey. A smaller plant about a foot high. Root-stock tuberous. Leaves mostly ovate and stalked, the upper ones chiefly sessile and slightly decurrent. Cymes small and few flowered. Flowers pale yellow.

Damp, shady places and borders of streams, local. April-June.

**S. bulbosum** Schimp. Leaves broadly lanceolate, slightly or not at all decurrent. The lower ones petioled. The slender root-stock forms rounded tubers. Flowers small, pale yellow. Scales of corolla linear, very prominent and more than half the length of the corolla itself.

Fields and shady places, rare. March-May.

**S. Bicknellii** Bucknall (*S. bulbosum* × *tuberosum*). This hybrid was found by Mr. Bicknell near Bordighera, and is described by Mr. C. Bucknall in his excellent "Revision of the Genus *Symphytum*" in "Journ. Linn. Soc.," Dec., 1913.

**S. floribundum** Shuttle. This has been recorded but not recently seen from a few places by streams near Aups, Hyères, and Ampus. The flowers are whitish and the leaves rather broad, the upper ones decurrent and the lower ones long petioled and amplexicaul at base. Scales of corolla short, lanceolate, obtuse. It is described by Mr. Cedric Bucknall (loc. cit.) and has nothing to do with *S. mediterraneum* K., as thought by Schultz and other Botanists. "Its distinguishing characters are the partially decurrent leaves, the dense many-flowered racemes, the short pedicels of the flowers, and the campanulate calyx not divided to the middle." It was discovered at Hyères by Shuttleworth in 1871 and appears very rare, for Mr. Bucknall has seen specimens only from there and from Aups. *S. mediterraneum* K. (1837) grows at Aubagne (Bouches-du-Rhône) not 20 miles from Toulon, and possibly in the Var and in Alpes-Marit. But it is nearer *S. tuberosum*.

## ANCHUSA L.

**A. officinalis** L. Alkanet. Biennial, about 2 ft. high, covered with coarse, stiff hairs. Root-leaves long and stalked, lower stem-leaves lanceolate, upper ones smaller. Flowers nearly sessile, rich blue, in one-sided forked spikes lengthening as the flowering advances.

Borders of fields and waste places, rare. June-August. Les Iles d'Hyères.

**A. undulata** L. Biennial. Leaves oblong-lanceolate, sinuate; corolla-tube longer than the limb and slightly passing the calyx. Flowers blue or purplish. Fields and vineyards, rare. May-July. Toulon, Hyères, Cannes, etc.

**A. italica** Retz. (Plate XXII). Leaves lanceolate, hispid, entire or slightly sinuate. Corolla-tube as long as the limb and shorter than the calyx. Flowers a beautiful rich blue or sometimes purplish-blue. Lower leaves petioled. Borders of fields and waste places, common. May-June.

## LYCOPSIS L.

**L. arvensis** L. Small Bugloss. Annual. Very hispid, with small tuberous-based bristles. Root-leaves petioled, obovate-lanceolate, stem-leaves linear-oblong, sessile, acute, margin waved and toothed. Cymes terminal, simple, or forked, drooping and recurved finally. Flowers subsessile. Corolla small, bright blue. Nutlets small, reticulate.

Sandy places, fairly common. May-July.

## ALCANNA Tausch.

**A. lutea** DC. Annual. Hispid and almost glandular. Leaves oblong-lanceolate, lower ones shortly petioled, the others sessile. Flowers yellow, small,

in elongated racemes. Pedicels very short, curved down after flowering. Calyx-lobes lanceolate-acute.

Sandy places, rare. April-June. Ile de Porquerolles, Ile du Levant.

**A. tinctoria** *Tausch.* (*Lithospermum tinctorium* *L.*). Plant whitish with non-glandular bristles. Stem very leafy. Leaves lanceolate, lower ones petioled, the others embracing the stem. Flowers blue or purplish, rather small. Pedicels as in the last. Calyx-lobes lanceolate, erect. Nuts tubercled.

Dry, sandy places, rare. April-June.

#### LITHOSPERMUM *L.* GROMWELL.

**L. fruticosum** *L.* Shrubby Blue Gromwell. Small under-shrub about a foot high, covered with close, greyish stiff hairs. Stems woody. Leaves small, linear, sessile, rolled in at borders, hispid above and on the dorsal nerve. Flowers blue or purple (similar to those of the cultivated *L. prostratum* from Western France).

Dry, arid rocky places, rare. April-June. Only in a few places on the higher ridges of the Sainte-Baume chain.

**L. purpureo-cæruleum** *L.* "Purple Gromwell" (Plate XXII). Stem decumbent, leafy, 1-3 ft. long, with shorter ascending flowering stems, ending in a leafy, forked cyme. Leaves lanceolate, hairy. Flowers nearly sessile, deep blue. Calyx-segments narrow. Nuts smooth and shining. The long, arching, leafy, barren shoots root at the tips, and thus the plant *strides* over the ground, and not by creeping roots.

Woods and shady places. April-June. Very local.

**L. arvense** *L.* Corn Gromwell. An erect, rather branched annual about a foot high, and rather hoary with adpressed hairs. Leaves linear-lanceolate. Flowers small, white, sessile, in leafy terminal cymes. Nuts hard, conical, and wrinkled.

Fields, crops, and vineyards, common. April-June.

**L. officinale** *L.* Common Gromwell. Much like the last, but stouter and taller. Flowers rather smaller, yellowish-white, calyx rather shorter. Nuts hard and white, very smooth and shining.

Borders of fields and woods. May-June.

**L. apulum** *Vahl.* Annual. Leaves small, linear, hispid, 1-nerved. Flowers small, subsessile, yellow. Calyx very hispid. Nuts rugose-tubercled, triquetrous-conical.

Dry, uncultivated places, rather rare. April-June.

#### ONOSMA *L.*

**O. echloides** *L.* Leaves linear-lanceolate, hispid, with white or yellowish bristles springing from glabrous tubercles. Flowers pale yellow, nodding, Corolla a third longer than the calyx, with small spreading triangular lobes.

Dry hills in the montane region near Grasse, etc., rare. May-July.

#### ECHIUM *L.*

**E. italicum** *L.* Biennial, 1-3 ft. high, whitish, with long closely set bristles. Stem robust, much branched and bushy, forming a pyramidal panicle. Leaves hispid, lower leaves elliptic-lanceolate, 1-nerved, stem-leaves sessile. Flowers pink or flesh coloured, rather small. Corolla-tube twice length of the calyx.

Borders of fields and roads, fairly common. May-July.

**E. vulgare** *L.* Viper's Bugloss. Biennial, 1-3 ft. high, covered with stiff, spreading hairs. Root-leaves stalked, but soon withering; stem-leaves linear-lanceolate. Flowers at first reddish-purple, then bright blue, in numerous one-sided cymes, forming a long terminal panicle.

Borders of fields and waste places away from the coast. May-July.



**E. tuberculatum** Hoffm. et Lk. = **E. pustulatum** G. G. This is perhaps a southern form of **E. vulgare**, which is very common on the littoral. May-July. It is covered with greyish tubercular hairs, the leaves are very narrow, and the corolla-tube longer than in **vulgare**.

**E. creticum** L. Red Cretan Echium. Annual or biennial, leaves oblong, upper ones lanceolate. Flowers very large, fiery red, in a rather loose cyme.

Road-sides and borders of fields, uncommon. April-June. Frequently seen about Gassin, Bormes, and at Agay and in the Esterel.

**E. plantagineum** L. Purple Echium. Biennial, 1-2 ft. high, covered with softer hairs than most species. Leaves soft; root-leaves very large, oval, soon withering; upper leaves cordate at base. Flowers blue-violet, very large, in a loose panicle. The lower corolla-lobes rather longer than the longest stamens.

Grassy, sandy, or waste places. May-July.

**E. calycinum** Viv. A small annual with very small blue flowers, and club-shaped leaves; and **E. maritimum** Willd. a small perennial with oblong spatulate leaves and larger flowers are found in a few places in the Var.

#### PULMONARIA L. LUNGWORT.

**P. vulgaris** Mérat. Root-leaves ovate-oblong, on long stalks, coarsely hairy and usually much spotted; stem-leaves shorter, mostly sessile, alternate. Flowers blue, in a terminal forked cyme. Corolla-limb spreading. Calyx very hairy, twice its length when in fruit.

Woods in the north of the Var, uncommon. April-May.

**P. affinis** Ford. and **P. ovalis** Bast. occur rarely in the mountain region of both Departments. The former has ovate-acuminate root-leaves suddenly contracted into a long winged petiole. The mature calyx is very broad at the base. The latter has some glandular hairs amongst the others, oval elliptical leaves gradually lengthened into a winged petiole, and a cylindrical and narrow calyx.

#### MYOSOTIS L. FORGET-ME-NOT.

**M. palustris** With. and **M. cæspitosa** Schult. are not uncommon in watery places. The former has a larger flower and a longer style.

**M. pusilla** Loisel. A very small annual species, grey-green in colour from its thick spreading hairs. Stems numerous, flowing almost from the base. Leaves oblong, obtuse. Flowers white or blue, very small. Fruiting pedicels erect, spreading, the lower ones hardly longer than the calyx. Calyx open at maturity.

Sandy woods and gravelly places. March-April.

**M. versicolor** Pers. A small hairy annual, with rather erect stem, a tuft of spreading root-leaves, and a few lanceolate stem-leaves. Flowers small and nearly sessile; corolla at first pale yellow and then blue as it fades. Calyx closed at maturity.

Fields and sandy places. April-June.

**M. hispida** Schlecht (= **M. collina** Hoffm.), a small annual with calyx open at maturity, i.e. with spreading segments, and **M. arvensis** Roth. are common in waste places and fields; **M. stricta** Lk. is a small and very rare rigid species with calyx-segments closed at maturity; and **M. sylvatica** Hoffm., the beautiful large-flowered Wood Forget-me-not, is found in damp mountain woods in both Departments, but in the Var chiefly in the north.

#### CYNOGLOSSUM L. HOUND'S-TONGUE.

**C. cheirifolium** L. = **C. argenteum** Lam. Biennial, about a foot high, white cottony. Leaves white tomentose on both sides, oblong-spatulate, 1-nerved, upper ones sessile. Flowers reddish, then violet or bluish, in leafy

spikes becoming loose. Corolla half as long again as calyx. Fruit obovate, covered with short spines.

Waste places and road-sides. April-June.

**C. pictum** *Ait.* Biennial, 1-2 ft. high, covered with greyish tomentum. Leaves with fine spreading close hairs on both sides, lanceolate, upper ones semi-embracing. Flowers pale blue-veined with violet. Corolla slightly longer than calyx. Carpels obovate, slightly convex, covered with short spines and conical tubercles.

Road-sides and borders of fields, fairly common. April-June.

**C. officinale** *L.* Common Hound's-tongue. Biennial. Stem stout, 1-2½ ft. high, branched above. Leaves lanceolate, lower ones oblong, stalked and often very long; uppermost sessile and clasping the stalk, all covered with dense, soft appressed down. Corolla rather small, dull purplish-red. Carpels flattened and bur-like.

Dry, stony places in the lower mountains. May-June.

**C. montanum** *L.* Green Hound's-tongue. Greener and more slender than the last, hairs more scattered and stiffer. Upper leaves broader at base and spikes more slender, with fewer and smaller flowers of a dull red then blue.

Shady mountain woods, rather rare. May-July.

**C. Dioscoridis** *Vill.* Biennial, about a foot high. Leaves green, covered with fine spreading hairs; root-leaves oblong-lanceolate, narrow; the others broader and rounded at the base; all 1-nerved. Flowers small, reddish then blue and violet, in loose naked spikes. Carpels with confluent tubercles.

Limestone hills in Alpes-Marit., rare. June-July.

#### ECHINOSPERMUM *Sw.*

**E. Lappula** *Lehm.* Annual or biennial. Stem branched in upper part, hispid and grey like the whole plant. Fruit-stalks erect. Stem-leaves lanceolate. Flowers blue, small, in unilateral axillary clusters, the spike becoming elongated. Nutlets finely tubercled outside, the lateral angles edged with two rows of hooked needles.

Dry fields and waste places, rare in the Var. June-August.

#### HELIOTROPIUM *L.* HELIOTROPE.

**H. europæum** *L.* Annual, greyish-green. Leaves oval, obtuse, rugose, petioled, greyish-green on both sides with soft pubescence. Flowers white or pale lilac, sessile in little tight clusters. Calyx very hairy, deeply divided into lanceolate segments, spreading on the fruit and persistent after it has fallen.

Fields and road-sides, very common. July-September.

#### SOLANACEÆ.

Calyx persistent. Corolla funnel-shaped, tube narrow. Spiny shrubs. LYCIUM.

Calyx persistent. Corolla rotate, anthers with pores. Berry 2-seeded. SOLANUM.

Calyx pentagonal. Corolla subcampanulate. Capsule 2-celled. HYOSCYAMUS.

Calyx persistent. Corolla subcampanulate. Anthers with slits. Berry 2-celled ..... ATROPA.

Calyx inflated after flowering. Fruit succulent, indehiscent.....PHYSALIS.

#### LYCIUM *L.*

**L. vulgare** *Dun.* A much-branched glabrous shrub, 3-10 ft. high, slightly spiny. Leaves green, narrow lanceolate or subspathulate, wedge-shaped. Flowers bright violet, solitary or fascicled, and peduncled. Calyx with 2 entire lips or 2-3 toothed. Berry orange-red, oblong.

Hedges and thickets. June-September.

**L. europæum** *L.* A stiffly branched very spiny shrub, 3-10 ft. high. Leaves greyish-green, rather fleshy, oblong-lanceolate or spathulate, 1-nerved. Flowers whitish or pinkish, shortly stalked. Calyx short, with 5 equal teeth. Berry globular, red or orange.

Hedges and road-sides. April-July.

## HYOSCYAMUS L. HENBANE.

**H. niger L.** A coarse, branched annual or biennial, 2 ft. high, hairy and viscid, with an unpleasant smell. Leaves large, sessile; upper ones clasping the stem, ovate and irregularly pinnatifid. Flowers very shortly stalked; upper ones sessile in one-sided leafy spikes. Calyx persisting round the fruit, about an inch long with 5 stiff, pointed teeth. Corolla pale dingy yellow with purplish veins. Capsule globular, many-seeded.

Waste places and rubbish heaps near houses. May-July.

**H. albus L.** (Plate XXII). Sometimes perennial, smaller than the last. Leaves petioled, suborbicular, almost cordate at base, sinuate-dentate. Corolla irregular, limb oblique, pale yellow, sometimes purple at base. Teeth of calyx shorter than in the last. Capsule less inflated.

Old walls, rocks, and waste places, common on the littoral. April-July.

## ATROPA L.

**A. Belladonna L.** Deadly Night-shade. An erect, usually glabrous and branching herb, 2 ft. high. Leaves stalked, ovate, entire, with a smaller one usually springing from the same point. Flowers solitary on short peduncles in the axils of the leaves. Corolla dull purplish, nearly 1 in. long, with 5 broad, short lobes. Berry large, globular, nearly black. Very poisonous.

Shady mountain woods. June-July. Rather rare.

## SOLANUM L.

**S. Dulcamara L.** Bitter Night-shade. Stem shrubby at base, with climbing or straggling branches. Leaves ovate or ovate-lanceolate, usually cordate at base, entire or with a smaller lobe on each side. Flowers rather small, purple with yellow anthers, in divaricate cymes. Berries oval, red.

Hedges and borders of streams. May-September.

**S. nigrum L.** Black Solanum. Annual or biennial, with spreading branches, 1 ft. high. Leaves stalked, ovate, with coarse angular teeth. Flowers small and white, in short cymes on short peduncles. Berries small, globular, black. Very polymorphic.

Waste and cultivated ground, common. June-October.

**S. villosum Lamk.** Hoary Solanum. A hairy, almost tomentose annual resembling the last but smelling of musk. Flowers small, white, in shortly stalked cymes. Berries small, orange-yellow.

Fields, road-sides, and rubbish heaps, fairly common. June-September.

## PHYSALIS L.

**P. Alkekengi L.** An erect plant, 1-2 ft. high. Leaves ovate-acuminate, upper ones in pairs. Flowers greenish-white. Berries globular, red, as large as a cherry, surrounded by the greatly inflated calyx which is truncate at base, net-veined, and orange-red when ripe.

Fields and shady places, uncommon. May-September.

**Datura Stramonium L.** Thorn Apple. This American plant, naturalized in many parts of Europe, is frequently seen in the Var. The leaves are large, with irregular pointed teeth or lobes. Flowers large, usually white, solitary, on short peduncles; corolla with 5 narrow teeth. *Nicotiana glauca* Graham (Tobacco plant) has long been naturalized on old walls and rubbish heaps, etc.

## VERBASCACEÆ.

## VERBASCUM L. MULLEIN.

*Stamens with white or yellowish hairs.*

**V. Thapsus L.** Great Mullein. A stout erect biennial, 2-4 ft. high, covered with soft woolly hair. Leaves oblong, pointed, slightly toothed, narrowed at base into two wings extending down the stem. Flowers yellow, in a dense woolly terminal spike, often more than 1 ft. long, 3 of the filaments



covered with yellowish hairs, and have short anthers; the 2 longer stamens more or less glabrous.

Hill-sides and waste places. May-August.

**V. montanum** *Schrad.* Differs from the last in being shorter, and in its leaves being less decurrent. The corolla is usually rather smaller.

Dry, stony hill-sides. June-August.

**V. thapsiforme** *Schrad.* Differs from the first in its much larger and flatter corolla and its longer anthers on the long stamens.

Waste places. May-August.

**V. Lychnitis** *L.* White Mullein. Stem-leaves nearly sessile, the lower ones narrowed into a footstalk, all nearly glabrous above, but with a powdery down beneath and on the stem and calyxes. Flowers numerous, pale yellow or nearly white in narrow, branching racemes. Hairs of the filaments white.

Woods and shady places. June-August.

**V. pulverulentum** *Vill.* Hoary Mullein. Plant 3-4 ft. high, covered with mealy white wool. Leaves sessile, lower ones often narrowed into a short footstalk, broadly oblong and crenate. Flowers numerous, in small clusters, yellow with white hairs on the filaments.

Pastures and waste places. June-August.

*Stamens with violet hairs.*

**V. Boerhaavi** *L.* Leaves white tomentose on both sides, thick, crenate or toothed, oval, upper ones amplexicaul; pedicels very short. Corolla rather large, yellow. Flowers in a long spike, interrupted at the base.

Dry, stony or waste places; fairly common. April-July.

**V. sinuatum** *L.* Leaves shortly tomentose, sinuate-pinnatifid. Pedicels shorter than calyx. Corolla rather small. Flowers yellow, in a panicle with divaricate branches.

Common in waste places and road-sides of the littoral. June-August.

**V. Chaixii** *Vill.* Leaves green above, or covered with a greyish tomentum which gradually falls off, crenate or toothed; lower leaves with truncate limb and long petioled, upper ones almost sessile. Flowers yellow with violet throat, rather small, in separate clusters.

Dry woods in the lower mountains. June-August.

**V. nigrum** *L.* Dark Mullein. Stem, 2-3 ft. high, ending in a long raceme. Leaves crenate, almost glabrous above, rather woolly beneath, lower ones large, cordate-oblong, on long stalks; upper ones nearly sessile, small and pointed. Flowers numerous, slightly stalked, bright yellow with beautiful violet anthers.

Shady woods and borders of fields. May-August.

**V. Blattaria** *L.* Moth Mullein. A tall and usually glabrous species. Leaves oblong, toothed or sinuate; lower ones stalked, middle ones sessile, upper ones clasping the stem or shortly decurrent. Flowers yellow or very rarely white; rather large, in a long loose raceme. Pedicels slender, usually solitary or occasionally 2 together in the axil of a bract and glandular.

Borders of ditches and streams and cultivated fields, common. June-August.

#### OROBANCHACEÆ.

Calyx deeply divided into 2 often bifid pointed sepals .....	OROBANCHE.
Calyx divided into 4 or 5 sepals; 2 bracteoles .....	PHELIPÆA.
Calyx with 4 broad, short teeth or lobes .....	LATHRÆA.

#### OROBANCHE *L.* BROOM-RAPE.

The following are the most important species of Broom-rape, with the host-plant upon the roots of which they grow, found on the French Riviera. The list is based largely on the work of Albert and Jahandiez.<sup>1</sup>

<sup>1</sup> For further information see the "Monographie der Gattung Orobanche," by Beck.

*Stigma yellow or whitish.*

**O. Rapum Thuill.** On Broom, Genista, etc. Tall, coarse, with large brown flowers.

**O. cruenta Bert.** (Plate XXIII). On various Leguminosæ. Reddish-yellow and glandular without, often blood-red, glabrous and shining within.

**O. variegata Walbroth.** On woody Leguminosæ, e.g. *Spartium junceum*, *Dorycnium suffruticosum*, etc.

**O. concolor Duby.** On *Scabiosa Columbaria*, *Coronilla scorpioides*, *Trifolium scabrum*, etc. Plant pale yellow.

**O. Hederæ Duby.** On Ivy. Spike long. Flowers pale yellow veined with violet. Forest of Ste.-Baume, Hyères, Solliès-Toucas.

**O. Salviæ Schult.** On *Salvia glutinosa* at St. Martin Lantosque, etc.

*Stigma purplish or violet.*

**O. speciosa DC.** On peas, beans, and vetches. Sometimes in great quantities and doing much damage to the crops. Very variable in colour and size, but distinctly handsome and sometimes 2 ft. high. Flowers usually whitish, veined with mauve. Stems usually reddish-violet, sometimes yellow with white or yellowish flowers.<sup>1</sup>

**O. Caryophyllacea Sm.** On *Galium* and other Rubiaceæ. Plant yellow or reddish, scented. Corolla pale yellow or red.

**O. sanguinea Presl. (O. crinita Viv.).** On *Lotus Allioni*. Stigma blood-red. Rare. Only known in France in 3 places in the Var and Ile de Port-Cros.

**O. epithymum DC.** On *Thymus* and *Satureia*. Flowers reddish.

**O. fuliginosa Reut.** On *Senecio Cineraria* in les Iles d'Hyères and Ile Ste. Marguerite, rare. Flowers purple-linen.

**O. Teucrii Holandre.** On *Teucrium*. Rare. Flowers reddish-brown.

**O. Ritro G. G.** On *Echinops Ritro*. Rare, near Toulon. Plan d'Aups, Plan de Lagnes, etc. Stems robust, reddish. Flowers variable.

**O. major L. (O. elatior Sutton).** On *Centaurea Scabiosa*, *aspera*, and *collina*. Plant yellow. Corolla reddish-brown.

**O. picridis Schult.** On *Picris* and other allied plants. Plant very pale.

**O. loricata Reichb.** On *Artemisia campestris* and *glutinosa*. Rare in the Var. Flowers yellow, streaked with violet.

**O. versicolor Schult. (O. pubescens Urv.).** On *Crepis bulbosa*, near Hyères, Toulon, Porquerolles, Le Luc.<sup>2</sup> Rare.

**O. minor Sm.** On various plants, very commonly on clover, and even seen on *Quercus Ilex* (Jahandiez). Flowers small, very variable.

**O. amethystea Thuill.** On *Eryngium campestre*. Flowers whitish, washed and veined with lilac. Stigma reddish.

#### PHELIPÆA C.A. Mey.

**P. cærulea C. A. Mey. = O. cærulea Vill.** On Milfoil in the mountain region. Stigma whitish. Flowers steel-blue.

**P. arenaria Walpers = O. arenaria Bork.** On *Artemisia glutinosa*. Stigma yellow. Flowers wine-red.

**P. nana Reichb. = P. olbiensis G. G.** On *Helichrysum Stachas*, *Phagnalon saxatile*, *Ornithopus compressus*, etc., rare, in sandy places.

<sup>1</sup> See "Orobanches," by H. S. Thompson, in "Knowledge," Feb., 1914.

<sup>2</sup> See "L'Orobanche pubescens D'Urv. en Provence; sa validité nominale et spécifique," by Alf. Reynier in "Bull. Soc. Bot. de France," 1913, pp. 325-30.

**P. lavandulacea** Schult. = **O. lavandulacea** Reichb. On *Psoralea*, *Thapsia*, *Acanthus*, etc. Stigma yellowish; corolla small, bluish.

**P. Mutell** Reut. On Leguminosæ, Composites and Labiates. Stigma violet. Corolla small, pale violet.

**P. ramosa** C. A. Mey. = **O. ramosa** L. On hemp, tobacco, *Senecio vulgaris*, *Erodium*, *Lactuca*, etc. Stem branched.

### LATHRÆA L.

**L. Squamaria** L. Toothwort, which is chiefly parasitical upon the roots of Hazel, Poplar, and Alder, and rarely upon Vines, has been found in the Forêt de Brouis in the Var by Messrs Jahandiez and Coufourier.

### SCROPHULARIACEÆ.

Sub-family I. ANTIRRHINIDÆ. Corolla with the upper lobes external in bud. Corolla not spurred or saccate. Stamens 4. Stigmas notched. SCROPHULARIA. Corolla spurred at the base. Capsule opening by pores.....LINARIA. Corolla saccate at the base. Capsule opening by pores.....ANTIRRHINUM. Corolla with small spur and open throat. Leaves linear divided. ANARRHINUM. Corolla tubular. Flowers axillary, solitary .....GRATIOLA.

Sub-family II. RHINANTHIDÆ. Corolla with the upper lobes never exterior in bud. Inflorescence centripetal.

Corolla-tube short, equal to the calyx which is deeply 5-fid. Leaves toothed. ERINUS.

Leaves alternate. Stamens 2 or 4, stigma 2-lobed.....DIGITALIS.

Corolla almost regular. Leaves opposite. Stamens 2, diverging; stigma capitate .....VERONICA.

Stamens 4 converging. Upper corolla lip entire or notched .....BARTSIA.

Stamens 4 converging. Upper corolla lip with 2 spreading lobes.....EUPHRASIA.

Stamens 4, in pairs. Upper lip slightly hooded .....ODONTITES.

Calyx large, inflated. Leaves toothed, opposite. Seeds winged. RHINANTHUS.

Leaves opposite. Seeds not winged, 1-2 in each cell .....MELAMPYRUM.

### SCROPHULARIA L.

**S. peregrina** L. Annual, glabrous, 1-2 ft. high. Stem hollow, square, often reddish. Leaves ovate-cordate. Calyx much shorter than the pedicel, with acute lobes not scarious at the borders. Flowers in axillary bunches, dark purple-brown, small.

Shady places among rocks and ruins. April-June. Found all along the Riviera near cultivated ground, and perhaps introduced with the olive and the vine.

**S. lucida** G. G. = **S. provincialis** Rouy. Biennial, glabrous and shining, 1-3 ft. high. Stem angular. Leaves bipinnatifid, on very short pedicels. Calyx-lobes very scarious. Flowers in a terminal panicle, purplish-brown.

Stony places and arid fields, widely spread. May-July.

**S. canina** L. (Plate XXIII). Plant 1-2½ ft. high, glabrous, nearly simple, with a loosely branched panicle of small reddish-brown flowers. Upper lip of corolla one-third as long as the tube. Leaves pinnatifid, with few, distant, narrow, incised segments. Ardoine says it differs from the last only by its small linear staminal appendage and by its smaller flowers. He adds that it is much less common than **lucida** in the same localities, and occurs at Menton and Gourdon; but Bicknell, on the contrary, says in the Bordighera district **lucida** is the rare one. His "single specimen, however, has very small flowers, while the numerous plants examined from the whole district, with the linear appendage, have flowers and leaf segments of very variable dimensions". Several botanists have recorded **S. canina** from the Var, but Albert and Jahandiez doubt its existence in that Department, and think it has been confused with **S. lucida**.

Stony places in the hills and on the littoral of les Alpes-Marit. April-May.



**S. ramosissima** *Loisel.* Perennial, glabrous, turning black on drying. Stems woody and much branched at the base. Leaves few, distant, small, oblong-lanceolate with triangular acute teeth. Flowers reddish-brown, very small, in a simple, long spike.

Sands and banks near the sea, rare, except between Fréjus and Ste. Raphael. April-June.

**S. nodosa** *L.* (Figwort), **S. alata** *Gilib.*, and **S. aquatica** *L.* are also found in the district.

#### ANTIRRHINUM *L.* SNAP-DRAGON.

**A. Orontium** *L.* Lesser Snap-dragon. Annual, erect, about a foot high, slender. Flowers usually in the axils of the upper leaves, deep purplish-pink or rose coloured, often larger in the south (**A. grandiflorum** *Chav.*) than in England. Calyx glandular hairy, with linear unequal lobes longer than the calyx.

Fields and waste places. February-October.

**A. latifolium** *DC.* Yellow Snap-dragon. Plant 1-2½ ft. high, robust, somewhat glandular. Leaves ovate or ovate-lanceolate, pubescent. Calyx hairy glandular, with obovate lobes much shorter than the corolla. Flowers very large, usually pale yellow.

Dry, rocky hill-sides, old walls, etc., from the coast to the mountain region. April-July.

**A. tortuosum** *Bosc.* Leaves linear, glabrous. Calyx glabrous, with oblong ovate lobes much shorter than corolla. Flowers large, purplish-red.

Old walls and rocks, rare and doubtfully native. May-July.

**A. majus** *L.* The Great Snap-dragon of gardens with large reddish-purple flowers is sometimes seen on walls and banks, but it is not native in the south of France.

#### ANARRHINUM *Desf.*

**A. bellidifolium** *Desf.* Biennial or perennial, 1-2 ft. high, glabrous. Stem erect, very leafy. Root-leaves broadly spathulate, irregularly dentate; stem-leaves very close and divided from the base into linear, entire segments. Flowers pale blue or mauve, small and numerous, in long spikes.

Rocks, old walls, and thickets, rare. May-July. Chiefly in the hill district at places like Grasse, Montrieux, Solliès-Toucas, and the Sainte-Baume chain.

#### LINARIA *Fuss.*

**L. Sieberi** *Reichb.* This is a rare annual species intermediate between **L. spuria** and **L. elatine**, both of which are common in fields. Leaves very woolly, upper ones hastate. Flowers pale yellow with violet upper lip. Calyx hairy, lobes lanceolate-acuminate.

Sandy fields in the littoral of the Var, rare. June-September.

**L. commutata** *Bernh.* = **L. græca** *Chav.* A hairy perennial recumbent species resembling the last and **L. elatine** in habit, but with larger flowers with recurved spur and hairy calyx with linear-lanceolate lobes. Capsules shorter than the calyx.

Damp, sandy places. May-July.

**L. cirrosa** *Willd.* Annual, slender and hairy, with thread-like stems and recumbent or climbing habit. Leaves small, lanceolate-hastate acute, entire, ciliate. Flowers violet with white palate, very small, solitary on long capillary peduncles. Capsule globular, longer than the calyx.

Sandy places near the sea. May-July.

**L. pelliceriana** *Mill.* Annual, glabrous, 1-1½ ft. high. Stems erect, simple. Leaves sessile broadly linear, alternate, the lowest ovate-lanceolate. Flowers purple with paler palate, rather large, in a short dense head. Calyx glabrous, with linear acute lobes. Spur of corolla straight. Capsule flat at the top, much shorter than the calyx.

Grassy, sandy places, common on the littoral. May-July.

**L. simplex DC.** A glabrous and glaucous slender annual, about a foot high. Lower leaves in whorls, the others alternate, linear or linear-lanceolate. Flowers yellow, rather small, shortly peduncled. Calyx glandular-ciliate, with linear-spathulate lobes. Capsule globular, longer than the calyx.

Dry fields, old walls, etc. March-July.

**L. arvensis Desf.** A similar plant to the last but with pale blue sessile flowers with whitish palate.

Dry, sandy, fields, rather rare in the south. April-July.

**L. chalepensis Mill.** Annual, about a foot high, erect. Leaves of sterile shoots linear-oblong, other leaves linear, erect, 1-nerved. Flowers white, in a long loose spike; spur very long and slender and much curved.

Cultivated fields and crops, uncommon. April-June.

**L. striata DC.** Stem 1-1½ ft., glabrous, leafy. Lower leaves in whorls of 3-4; upper ones single, linear-lanceolate acute. Flowers pale lilac or mauve streaked with violet; palate yellow; spur of corolla straight, short and obtuse. Panicle loose and rather long.

Fields, stony places, and road-sides. June-September.

**L. organifolia DC.** A small biennial or perennial, hairy glandular. Leaves opposite, lengthened into a petiole, obovate. Flowers bluish-mauve, rather large for the plant, with open throat, in loose leafy panicles. Calyx hairy glandular, with linear, obtuse lobes.

Shady limestone rocks and walls in the hills, rare. April-July. It grows at Sainte-Baume (near the Grotto), Montrieux, near Solliès-Toucas, etc.

**L. rubrifolia DC.** Annual; somewhat like the last in habit but smaller in all its parts. Leaves less petioled, the lower ones often reddish beneath. Flowers bluish-violet. Calyx hairy glandular.

Dry hill-sides and sandy places, uncommon. April-July.

The following species may also be found: **L. minor Desf.** (viscid, flowers minute) occasionally on railways as in other countries, **L. supina Desf.**, **L. reflexa Desf.**, and **L. triphylla Mill.** The last is a thick glabrous and glaucous annual; stem leaves in threes, large, oval; flowers tricoloured.

#### GRATIOLA L.

**G. officinalis L.** Plant glabrous, 9-18 in. high. Stem erect, hollow, square above. Leaves opposite, sessile, lanceolate, 3-nerved, serrate in upper part. Flowers axillary, solitary, long peduncled, pinkish-white with yellowish tube, rather large.

Streams, ditches, and damp places. June-August.

#### ERINUS L.

**E. alpinus L.** A small tufted and sometimes creeping plant. Leaves oblong obtuse, sessile, toothed at top; stem-leaves alternate, somewhat hairy. Flowers in terminal corymbs, rose coloured. Corolla saucer-shaped with 5 emarginate lobes.

Rocky or stony places in the montane region, rare. May-August. It descends to the hills near Menton, Nice, and Grasse, and was found by M. Jahan-diez in 1913 in the north of the Var.

#### VERONICA L. SPEEDWELL.

**V. Teucrium L.** Teucrium-leaved Speedwell (Plate XXIII). Plant 6-12 in. high, covered with greyish pubescence and with almost woody root-stock. Leaves subsessile, oblong, strongly toothed. Flowers blue (rarely pink), large, in axillary and opposite spikes. Calyx-segments very unequal. Capsule obovate, hairy. Clearings of woods and grassy places in the hills, local. May-July. The writer found a few plants with clear pink flowers and anthers on a grassy col in the Sainte-Baume chain in June, 1913.

**V. Chamædrys L.** Germander Speedwell. Leaves broadly ovate, cordate, crenate. Flowers bright blue, rather large, on slender pedicels.

This grows in the clearings of woods and grassy places in the hills and lower mountains and flowers from April to June.

**V. urticæfolia** Jacq. Nettle-leaved Speedwell. Leaves sessile, ovate, acute, with cordate base, sharply serrate. Racemes loose, opposite. Flowers pale pink or mauve, rather small. Capsule erect, compressed, slightly emarginate.

Woods and shady places in the lower mountains. June-July.

**V. Beccabunga** L. (Brooklime), **V. Anagallis** L. (Water Veronica), and **V. anagalloides** L. a more slender plant with narrow, almost entire leaves, are occasionally found in watery places; and **V. officinalis** L. is common in woods and shady places. **V. serpyllifolia** L. grows in rather damp grassy spots, and **V. spicata** L. can be found in the lower Maritime Alps but not in the Var. Other common species are **V. arvensis** L., **V. Persica** Poir., **V. polita** Fr., **V. hederæfolia** L., and **V. Cymbalaria** Bodaro. **V. verna** L. and **V. triphyllus** occur rarely in sandy places, and **V. acinifolia** L. may be found in fields and crops. It is a small glandular annual with small sky-blue flowers and glandular-ciliate capsule divided into two rounded lobes by an acute sinus.

#### DIGITALIS L. FOXGLOVE.

**D. lutea** L. Pale Yellow Foxglove. Plant 1-3 ft. high, usually glabrous. Leaves lanceolate, shining, glabrous, finely serrated. Flowers small, pale lemon-yellow, neither veined nor spotted, in a long, compact tapering unilateral raceme. Capsule ovoid, conic, glabrescent.

Ravines and shady places in the hills. May-July.

#### EUPHRASIA L. EYEBRIGHT.

The only Eyebrights recorded from the Var are **E. pectinata** Ten. (with the vars.  $\beta$ . **Tatarica** Fisch., and  $\gamma$ . **Bicknellii** Wettst.) and **E. salisburgensis** Funck from mountain pastures. They grow also in the Ligurian hills.

**E. officinalis** L. (Common Eyebright) is recorded from the Maritime Alps, throughout the Alpine and mountain region, descending to Grasse and the hills above Menton. July-Sept.

#### ODONTITES Hall.

**O. lutea** Reichb. A stiff, wiry, much-branched annual about a foot high, sometimes more. Leaves linear-acuminate, sessile, usually entire, 1-nerved. Flowers deep yellow, in long dense spikes. Calyx pubescent, with acute triangular lobes, shorter than the fruit. Stamens longer than the corolla.

Dry hill-sides and pine-woods, very common. August-October.

**O. viscosa** Reichb. Annual about a foot high, covered with glandular hairs and viscous, scented. Stems stiff, erect, with spreading branches. Leaves linear-acuminate, entire, 3-nerved. Flowers small, pale yellow.

Mountain woods. August-September. Rather rare.

**O. verna** Reichb., **O. serotina** Reichb., both with red flowers, and **O. lanceolata** Reichb. with yellow flowers also occur. **O. lanceolata** grows in crops in sandy hills. It is hairy and densely leafy and attains a foot in height. The yellow flowers are in dense elongated spikes with many long leafy bracts. Calyx rather longer than the fruit. June-August

#### BARTSIA L.

**B. latifolia** Sibth. and Sm. Annual, hairy-glandular, 3-8 in. high, reddish. Leaves oblong, deeply dentate. Flowers crimson and yellow, with whitish tube. Anthers glabrous. Capsule glabrous, narrow.

Grassy places on the littoral and in the hills. March-May.

**B. viscosa** L. Viscid Yellow Bartsia. Annual, erect, rigid, a foot high, covered with short viscid glandular down. Leaves broadly lanceolate, coarsely toothed. Flowers lemon-yellow, in a long terminal spike, lower lip much longer



than the upper. Capsule oblong; enclosed within the lanceolate-acute lobes. Anthers hairy.

Damp, sandy fields. May-June.

**B. Trixago** *L.* Another viscid erect annual, and sometimes growing with it. Leaves lanceolate or lanceolate-oblong, with distant large teeth. Flowers whitish, mixed with pink or yellow, handsome, in a dense leafy spike. Calyx-lobes oval obtuse. Capsule ovoid-globular, with 2 beaks.

Fresh, grassy fields. May-June.

#### RHINANTHUS *L.* YELLOW RATTLE.

**R. minor** *Ehrh.* (Common Yellow Rattle), **R. Alectorolophus** *Poll.*, and **R. Burnati** *Chab.* are found in certain pastures in the hill region.

#### MELAMPYRUM *L.* COW-WHEAT.

**M. arvense** *L.* Annual, about a foot high. Leaves sessile, linear-lanceolate; upper ones laciniate at base; bracts purple-red or rarely white, ovate-lanceolate with long setaceous teeth. Flowers purple with yellow throat, in a long spike.

Crops and fields. June-July. Uncommon. At Plan d'Aups in June, 1913, the writer found many plants with white or greenish-white flowers and bracts, growing with the type in a cornfield.

**M. nemorosum** *L.* Annual, hairy. Known by its large violet-coloured bracts or floral leaves, yellow flowers with orange palate and rusty-red tube.

Mountain woods, uncommon. July-August.

**M. cristatum** *L.* is also rarely seen in mountain woods of both Departments, and **M. pratense** *L.* in those of the Maritime Alps only.

#### LENTIBULARIACEÆ.

Aquatic. Stamens on the base of the corolla-lip .....UTRICULARIA.  
Terrestrial. Stamens on the base of the corolla-tube .....PINGUICULA.

#### UTRICULARIA *L.* BLADDERWORT.

**U. vulgaris** *L.* (Common Bladderwort) is found rarely in canals and pools near Toulon and La Seyne.

**U. minor** *L.* (Lesser Bladderwort) is recorded from Castigneaux near Toulon and near Nice.

**U. neglecta** *Lehm.* is also recorded from near Nice by Ardoino.

The three species are quite rare in the South.

#### PINGUICULA *L.* BUTTERWORT.

**P. grandiflora** *Lamk.* descends to the Gorge of Saorge, Fontan and St. Dalmas on the Col de Tenda road (Ardoino) and **P. vulgaris** *L.* descends to Ste. Agnes above Menton, but is widely spread at a higher elevation in the Maritime Alps. The flowers of both are deep violet.

#### LABIATÆ.

Tribe I. OCYMOIDEÆ. Calyx tubular, 13-15 ribbed, 5-lobed; flowers small, in false whorls forming one spike .....LAVANDULA.

Tribe II. SATUREINEÆ. Corolla-lobes flat or margins recurved. Stamens 2-4, remote, spreading under the upper lip, 2 upper shorter or 0; anther-cells contiguous or confluent. Nutlets free, smooth or nearly so.

\* Corolla subregular. Stamens spreading; anthers 2-celled.

Perfect stamens 4 .....MENTHA.  
Perfect stamens 2 .....LYCOPUS.

- \*\* Corolla 2-lipped. Stamens 4, distant.  
 Calyx equally 5-toothed. Plant erect, leaves broad .....ORIGANUM.  
 Calyx 2-lipped. Plant procumbent, leaves small .....THYMUS.  
 Calyx not 2-lipped, campanulate, naked at the throat .....SATUREIA.  
 Calyx narrow, usually equally 5-toothed.....MICROMERIA.  
 Calyx-teeth almost equal; flowers in a unilateral spike .....HYSSOPUS.  
 \*\*\* Corolla 2-lipped. Stamens 4, conniving under the upper lip.  
 Corolla-tube straight; upper lip flat .....CALAMINTHA.  
 Corolla-tube curved, ascending, upper lip concave .....MELISSA.
- Tribe III. MONARDEÆ. Stamens 2, erect or ascending; anthers 1-celled, or if 2-celled, remote. Nutlets free, smooth, or nearly so.  
 Anther-cells separate. Calyx 2-lipped .....SALVIA.  
 Anther-cells almost united into one. Upper corolla-lip bifid .....ROSMARINUS.
- Tribe IV. NEPETEÆ. Stamens 4, 2 upper and longer; anther-cells 2, parallel or nearly so. Nutlets smooth or tubercled.  
 Upper lip of corolla truncate .....NEPETA.
- Tribe V. STACHYDEÆ. Stamens 4, parallel, 2 upper shorter, ascending under the concave upper lip or included in the tube. Nutlets free, smooth or tubercled.  
 \* Calyx 2-lipped, not inflated, lips closing over the fruit.  
 Filaments simple, 2 lower anthers 1-celled.....SCUTELLARIA.  
 Filaments 2-fid, anthers all 2-celled .....BRUNELLA.  
 \*\* Calyx inflated or 2-lipped, anthers exerted.....MELITTIS.  
 \*\*\* Calyx tubular, anthers included .....MARUBIUM.  
 Calyx tubular, with 5 spiny teeth .....SIDERITIS.  
 \*\*\*\* Calyx 5-toothed, subcampanulate, equal or oblique.  
 Calyx-teeth equal. Anthers glabrous. Nutlets obtuse.....STACHYS.  
 Calyx-teeth spinous. Anthers ciliate. Nutlets compressed .....GALEOPSIS.  
 Calyx-teeth spinous. Anthers glabrous. Nutlets 3-quetrous, truncate  
 LEONURUS.  
 Calyx 5-nerved. Anthers hairy. Nutlets 3-quetrous, truncate .....LAMIUM.  
 Calyx limb spreading, teeth broad. Anthers glabrous. Nutlets obtuse  
 BALLOTA.  
 Calyx tubular, 5-toothed. Nutlets truncate. Plants often ligneous and covered with stellate hairs .....PHLOMIS.
- Tribe VI. AJUGOIDEÆ. Stamens 4, parallel, ascending, exerted, 2 upper shorter. Nutlets connate, base oblique and rugose.  
 Calyx tubular, 5-toothed. Upper corolla-lip 2-partite.....TEUCRIUM.  
 Calyx ovoid 5-cleft. Upper corolla-lip entire or notched .....AJUGA.

LAVANDULA L. LAVENDER.

**L. Stœchas L.** A small under-shrub, 1-2 ft. high, covered with grey tomentum. Leaves linear, greyish-green on both sides. Flowers small, dark purple, forming with small bracts a dense spike, quadrangular in section, surmounted by a bunch of large, sterile purple bracts. Occasionally the large bracts are quite white (var. *albicans* *Conill.*).

Very common in dry places on the littoral, especially in pine-woods, heaths, and maquis. February-June. Much used on the Riviera for placing among clothes, as is the common cultivated Lavender in England.

**L. vera DC.** Lavender. Under-shrub, 1-2 ft. high, woody for about a foot in height. Leaves green finally, linear or linear-oblong, shortly downy. Flowers bluish, scented aromatically. Bracts broad, oval membranous, brown.

On hills, except on the littoral. June-July.

**L. latifolia Vill.** Broad-leaved Lavender. A similar under-shrub, but greyer, with very short woody stem. Leaves oblong-spathulate. Flowers darker than the last; bracts linear, greenish.

Dry hills extending as far as the sea near Toulon, Hyères, etc. June-August.

## MENTHA L.

The following Mints occur in the district, viz. *M. rotundifolia* L., very common and polymorphic; *M. silvestris* L., rare on the littoral; *M. aquatica* L. and *M. Pulegium* L., fairly common in damp places. *M. candicans* Crantz and *M. arvensis* L. occur in the montane region about St. Martin Vésubie, etc.

## LYCOPUS L.

*L. europæus* L. Gipsy-wort. Leaves oval-oblong, serrate, often pinatifid at base. Flowers white spotted with red, in axillary clusters. Damp places. June-August.

*Origanum vulgare* L. (Marjoram) is not uncommon in woods, hedges, and road-sides, especially in hilly districts. Its leaves are ovate or ovate-oblong, an inch long, and slightly toothed. Flowers purple, in globular, compact heads forming a trichotomous terminal panicle. June-August.

## THYMUS L. THYME.

*T. vulgaris* L. Small under-shrub about a foot high. Leaves small, linear or lanceolate, grey with down, rolled in at the margins. Stems woody, erect and stiff. Flowers pink or white, fragrant.

Common on most of the dry hills from the littoral to the montane region. March-June. In 1913 it was in blossom in several places near Carqueiranne as early as 20 February.

*T. Serpyllum* L. in many forms and *T. Chamædryis* Fr. are found in the hilly and mountainous regions. Useful notes on these and other Labiates are to be found in Bicknell's "Flora of Bordighera and San Remo" and in Briquet's "Labiées des Alpes-Maritimes".

## HYSSOPUS L.

*H. officinalis* L. Hyssop. Leaves linear-lanceolate, obtuse, perforated with glandular dots. Flowers an intense blue. Stem woody at the base.

This beautiful plant is very rare in both Departments. It is found near Draguignan, Solliès-Toucas, Grasse, etc. July-August.

## SATUREIA L.

*S. hortensis* L. (a greyish-red annual with leaves linear, in pairs; flowers small) is common in fields in the Var after the crops (June to September); and *S. montana* L. is very common throughout the hilly and mountainous districts. It has narrow lanceolate-acute leaves, shining and glabrous but ciliate at borders. Flowers pink in dense long terminal heads. June-October.

## MICROMERIA Benth.

*M. Piperella* Benth. Stems wiry, 4-6 in. high. Leaves small, ovate, sessile, glabrous. Flowers reddish-purple. Corolla-tube long and slender, lower lip of 3 nearly equal lobes. Cymes 1-3 flowered. Stamens 4. Calyx reddish, 5-toothed, not 2-lipped.

Rocky places in the French and Italian Maritime Alps where it is endemic. June-September. It can be seen at San Dalmazzo di Tenda, and at l'Agel above Menton. Also near Pigna in Liguria.

## CALAMINTHA Manch.

(These plants are now sometimes placed in *Satureia* and sometimes in *Clinopodium* L.)

*C. Nepeta Savi*. Plant about 2 ft. high, greyish-green, with strong pleasant scent. Stem much branched. Leaves small, oval obtuse, on short petioles, crenate. Flowers lilac or pale purple, in numerous axillary clusters on branched peduncles. Calyx glabrescent with equal teeth.

Common in dry stony places and hill-sides. July-October. In 1912 this rather elegant plant was in flower near Hyères until mid-November.



**C. Acinos Clairv.** Field Calamint, Basil Thyme. A branched annual 6-9 in. high, slightly downy. Leaves stalked, rather small, ovate-acuminate, toothed. Flowers pale purple or rarely white, small, in axillary whorls. Calyx strongly ribbed, the tube enlarged on underside of the base and contracted at the mouth; teeth short and acute. The corolla but little longer than the calyx. In England it is often nearly twice as long, but we have not seen that form on the Continent. Nor have we seen it on limestone rocks as usually in England.

Hill-sides, fields, and uncultivated ground. May-June.

**C. officinalis Mæsch.**, **C. ascendens Ford.**, **C. nepetoides Savi** (in the mountains), and **C. Clinopodium Benth.** (Hedge Calamint) also occur.

### MELISSA L.

**M. officinalis L.** This pleasant lemon-scented herb, with oval coarsely crenate leaves and pale yellowish flowers in axillary clusters, is seen sometimes by road-sides and in shady places. June-August.

### ROSMARINUS L.

**R. officinalis L.** Rosemary. Shrub 2-4 ft. high, evergreen, aromatic, much branched, very leafy. Leaves leathery, sessile, linear, whitish beneath, rolled in at borders. Flowers pale mauve or blue, or sometimes white, in small axillary and terminal clusters. Calyx bell-shaped, 2-lipped, mealy; upper corolla-lip deeply bifid, lower one 3-lobed.

Very common on dry hill-sides on the littoral, ascending to Ampus and Grasse and flowering all the year. It is very pleasant when burnt. The essential oil is distilled and used in the composition of Eau de Cologne.

### SALVIA. L.

**S. officinalis L.** Common Sage. Probably native in a few places in the Var, but usually only naturalized on the dry hill-sides. May-July.

**S. verticillata L.** Whorled Salvia. Plant 2-3 ft. high, branched, hairy, of disagreeable odour. Leaves ovate-cordate, acute; the lower ones auricled. Flowers pale violet, small and numerous, in dense distant whorls.

Road-sides and waste places, rare. May-August.

**S. Verbenaca L.** Wild Sage. Leaves ovate-cordate, coarsely toothed or lobed and much wrinkled, upper ones sessile, lower ones stalked. Flowers small, blue, in whorls of about 6, forming terminal spikes.

Road-sides and fields. April, June, and September.

**S. horminoides Pourr.** Leaves oblong, coarsely lobed. Bracts shorter than the calyx. Corolla small, blue, in long spikes, upper lip scarcely curved. A taller plant than the last.

Road-sides and fields, especially on the littoral. April-July.

**S. Clandestina L.** Root-leaves deeply toothed or pinnatifid, upper ones sessile. Flowers pale blue or nearly white, in close whorls forming a short spike. Corolla twice as long as calyx, with spreading unequal lips, the upper lip being sickle-shaped. Calyx-teeth almost closed when plant is advanced. The smallest species.

Borders of fields and roads and grassy places. March-September.

**S. viridis L.** is rare near Toulon and Carqueiranne; **S. Sclarea L.**, **S. pratensis L.** with beautiful purple or deep mauve flowers, and **S. silvestris L.** are sometimes seen; and **S. glutinosa L.**, a sticky species with large dirty yellow flowers, occasionally appears in the montane region. July-Sept.

### NEPETA L.

**Nepeta Nepetella L.** and **N. Cataria L.** (Catmint) occasionally occur, and Ground Ivy (**Nepeta hederacea Trev.**) is fairly common in the spring in damp grassy places.

## LAMIUM L. DEAD-NETTLE.

**L. longiflorum** *Ten.* Large flowered Dead-nettle. Stems erect, glabrous, hollow. Leaves ovate-cordate, petioled, with obtuse teeth and usually doubly toothed. Bracts very short. Calyx downy, with triangular-lanceolate teeth acuminate. Corolla-tube straight, suddenly enlarged, twice length of calyx. Upper lip emarginate. Flowers large, purplish-red.

Stony, shady places in the mountains, very local. May-July.

**L. maculatum** *L.* Spotted Dead-nettle. Stems less erect. Leaves ovate-cordate, doubly toothed, petioled, often spotted with white. Upper leaves triangular, acuminate. Calyx curved with a ring of hairs within. Corolla hairy outside, purple-red, with darker spots on lower lips, the lateral lobes reduced to a narrow tooth. Plant strongly scented.

Hedges and shady places, fairly common. March-October.

**L. amplexicaule** *L.* Henbit. Annual. Upper leaves sessile, amplexicaul, kidney-shaped, toothed. Corolla-tube straight, naked, slender, nine times as long as calyx. Flowers purple, often much larger than in England.

Fields, crops, and old walls, very common. March-October.

**L. hybridum** *L.* and **L. purpureum** *L.* (Common Red Dead-Nettle) occur; but **G. galeobdolon** *Crantz*, the yellow Dead-Nettle or Archangel, only grows in the sub-Alpine woods about Tenda, etc. The white Dead-Nettle (**L. album** *L.*) is not found in the Mediterranean region.

## GALEOPSIS L.

**G. Ladanum** *L.* (Red Galeopsis) a small annual with spreading branches, lanceolate-toothed leaves and purple-red flowers, and the sub-species **G. angustifolia** *Ehrh.* are common, especially in the Var; while **G. Tetrahit** *L.* (Hemp-nettle) and one or two others are recorded from Alpes-Marit.

## STACHYS L.

**S. maritima** *L.* Plant 6-12 in., white tomentose. Leaves oval-oblong, softly downy on both sides, finely crenate, net-veined. Calyx-teeth triangular acute, hairy. Flowers yellow, in whorls of 6-8, forming a dense short spike.

Maritime rocks and sands, uncommon. May-July.

**S. recta** *L.* Leaves oblong-lanceolate, downy. Calyx-teeth triangular acuminate, hairy, with glabrous point. Flowers pale yellow, in close whorls of 4-6 forming an interrupted spike.

Hill-sides, woods, and grassy places, common. April-July. On 25 March, 1913, it was in flower on a limestone cliff near the summit of Mont Coudon (Var).

**S. heraclea** *All.* (Plate XXIII). Leaves oblong-obtuse, petioled, truncate or slightly cordate, rugose and woolly but green. Flowers brownish-red in whorls of 6-10. Calyx glandular hairy, with unequal teeth lanceolate-acute and spinescent. Plant 1-2 ft. high with erect woolly green stems.

Rocky places, especially limestone, and dry woods, chiefly in the lower mountains, rare. June-July.

**S. annua** *L.*, **S. hirta** *L.*, **S. arvensis** *L.* (Field Stachys), **S. silvatica** *L.*, **S. italica** *Mill.*, and **S. germanica** *L.* (Woundwort) may sometimes be found, but several of these are quite rare. **Stachys Betonica** *Benth.* = **Betonica officinalis** *L.* (Betony) is fairly common in woods on the hills. June-August.

## BALLOTA L.

**B. nigra** *L.* Black Horehound. This coarse, hairy plant 2-3 ft. high with a strong unpleasant smell is frequent in rubbish heaps and other waste places. The purplish flowers are in dense axillary clusters often turned to one side. May-July.







1



2



3



4



5



6

PLATE XXIII.

1. *Orobanche cruenta*.  
4. *Stachys Heraclea*.

2. *Scrophularia canina*.  
5. *Veronica Teucrium*.

3. *Vitex Agnus-Castus*.  
6. *Brunella hyssopifolia*.

**B. spinosa** Lk. = **B. frutescens** Woods = **Molucella frutescens** L.  
A small prickly under-shrub, much branched and hairy. Leaves oval, crenate. Flowers white, in whorls at the tops of the branches. Bracteoles very spiny. Calyx hairy, widened at the throat, with 5 spreading sharp teeth and several smaller ones. A very distinct plant, growing in dense masses at the foot of limestone cliffs, etc., in Alpes-Marit. Rare. Not known elsewhere except in the Basses-Alpes and by the Tenda road about Saorge and near Pigna above Bordighera, where it reaches its easternmost limit.

#### PHLOMIS L.

**C. herba-venti** L. Plant 1-2 ft. high, green, covered with long spreading hairs. Stem herbaceous, much branched. Leaves leathery, large, broadly lanceolate, glabrescent and shining above, pale beneath. Flowers purplish, 10-12 in dense whorls. Calyx-teeth spreading, very sharp, half as long as tube.

Stony hills and dry fields, occasional. May-July. There are some fine clumps of this on the Plan d'Aups close to the road passing through the village of that name at Sainte Baume.

**P. Lychnitis** L. Under-shrub 1-2 ft. high, cottony-felted. Leaves narrow oblong or lanceolate, entire, white felted beneath. Flowers yellow, 6-10 in a whorl. Calyx covered with long hairs, the teeth also hairy and less spreading than in the last. Bracts setaceous, rigid, covered with long silky hairs.

Limestone hills on the littoral of the Var, rare. May-July.

**P. fruticosa** L. A stout under-shrub 1-2 ft. high, cottony-felted. Leaves large, oval or oblong, entire, white-felted especially beneath, and strongly net-veined. Flowers deep yellow, handsome, 20-30 in a whorl of which 1-3 appear at the top of the branches. Bracts ovate-lanceolate, hairy. Calyx truncate at top with very short reflexed teeth. Corolla downy outside.

Dry waste ground and stony ravines, rare. May-July.

These three species of **Phlomis** which grow in the Var are the only kinds found in France; the majority of the genus grow in the Mediterranean region of Western Asia.

#### SIDERITIS L.

**S. romana** L. A hairy annual. Leaves ovate-oblong, green, with robust teeth. Flowers white or slightly pink, 6 in an axillary distant whorl. Calyx 2-lobed, ribbed, the upper tooth much larger and broader than the 4 triangular aristate teeth.

Dry, stony places and sandy fields, common on the littoral. April-July. In 1913 small plants were in flower in February near Hyères.

**S. montana** L. (rare) and **S. hirsuta** L. (upper corolla-lip white, lower one yellow) occur sometimes in somewhat similar places, but especially in the hills. **Marrubium vulgare** L. (White Horehound) is common in waste places near houses, etc. May-July.

#### MELITTIS L.

**M. Melissophyllum** L. Wild Balm. Plant 1-1½ ft., coarsely hairy and strongly scented. Leaves large, green, petioled, oval-acute, crenate. Flowers handsome, very large, rose colour, or white blotched with pink, on short pedicels in the axils of the leaves.

Woods and shady places, especially in the hills. May-July.

#### BRUNELLA L. (OR PRUNELLA).

**B. hyssopifolia** L. (Plate XXIII). Leaves linear-lanceolate, sessile, entire, ciliate. Flowers deep purple or occasionally magenta, rather large. Calyx-hispid, upper lip with 3 small teeth, the lower lip divided to the middle into 2 finely ciliate lobes.

Rocky limestone hills and dry pastures, local. May-July.

**B. alba** *Pall.* (**B. laciniata** *L. part.*). Leaves oblong, often lyrate or pinatifid, petioled. Flowers yellowish-white. Calyx hairy, upper lip 3-toothed, the central tooth very large and truncate, lower lip as in the last species.

Dry pastures, borders of fields and woods. June-July.

**B. vulgaris** *L.* (Self Heal) is quite common in borders of fields, woods, and meadows. June-September. **B. grandiflora** *Jacq.* with large, handsome purple flowers and reddish calyx is found only in the mountain region.

### AJUGA *L.*

**A. reptans** *L.* (Bugle) is very common in the spring in damp meadows, borders of streams, etc. The normally blue flowers are sometimes rose or white.

**A. genevensis** *L.* Sometimes a foot high, and a handsome plant with its bright blue flowers in whorls forming a long interrupted spike. Leaves oblong, crenate or dentate; root-leaves soon dying. Bracts trilobed.

Grassy places, borders of fields and woods in the hills only. May-July. In English books this species has generally been placed with **A. pyramidalis** or as a variety of it, but we think the two quite worthy of specific distinction, as usually considered on the Continent, where the plants are better known.

**A. Chamæpitys** *Schreb.* Yellow Bugle. A low, branched, hairy annual. Leaves very crowded and deeply divided into 3-linear lobes, which are sometimes again divided. Flowers yellow, in axillary pairs.

Dry, stony fields, common. April-October.

**A. Iva** *Schreb.* Another low species, but ligneous at the base, greyish-green and smelling of musk on account of the essential oil found in the hairs. Leaves sessile, linear-lanceolate, entire or slightly toothed at the top, rolled in at the borders. Flowers purple, 2-4 in axillary clusters, and often hidden by the leaves. Stony fields, dry pastures, and old walls, etc. May-October.

**A. pseudo-Iva** *Rob. et Cast.* is a rare sub-species with yellow flowers, found in sandy places in les Iles d'Hyères. June-July.

### TEUCRIUM *L.*

**T. Scordium** *L.* Water Germander. A small, procumbent, branching perennial, more or less covered with down. Leaves oblong, sessile, coarsely toothed. Flowers pale purplish-red, axillary, turned to one side. Calyx small, with 5 nearly equal teeth.

Wet meadows and near ditches. June-September.

**T. Chamædryis** *L.* Wall Germander. Stem erect, hairy, 6-9 in. high. Leaves ovate, deeply toothed, wedge-shaped at base and petioled, green. Flowers reddish-purple, in whorls of 2-6, forming a short terminal one-sided raceme. Calyx funnel-shaped, with 5 nearly equal teeth.

Dry, stony hill-sides, especially on limestone, common. May-September.

**T. Marum** *L.* Small under-shrub, very leafy. Leaves small, white tomentose beneath, broadly-lanceolate, entire, rolled in at the margin. Flowers small, purple, in clusters of 2-4 forming a long spike.

Maquis, thickets, and stony places, rare. May-July. In France only found in les Iles d'Hyères. It is the most characteristic plant which forms a link between the flora of these isles and that of Corsica. It is abundant at Port-Cros and Levant, where it attains its northern limit. The islanders call it *Herbe à chats* because its scent is attractive to cats and gives them a sort of intoxication.<sup>1</sup>

**T. massiliense** *L.* This is another rare and remarkable plant from the Isle of Levant, its only station in France. Gérard in his "Flora Gallo-provincialis" described it as "rarissima planta in insulis Stœchadam". In 1913 M. Jahandiez found it in greater numbers in the vallon des Grottes. The plant is

<sup>1</sup> Jahandiez, "Notice sur les Plantes Rares des Iles d'Hyères," in "Annales de Soc. Hist. Nat. de Toulon" (1913). See also "Les Iles d'Hyères" (1914).



grey-felted and much branched. Leaves ovate, with almost truncate base, crenate, rugose, shortly petioled. Flowers rose, small, in long loose spikes. Upper lip of calyx very broad. May-July.

**T. flavum** *L.* Plant ligneous at base, 1-2 ft. high. Leaves petioled, thick, hairy or pubescent and yet shining above, ovate, almost truncate at base, pale beneath. Flowers yellow, rather large, in whorls of 2-6 forming long one-sided spikes interrupted at the base.

Dry hills and limestone rocks on the littoral. June-July.

**T. lucidum** *L.* Entirely glabrous. Leaves petioled, ovate-wedge-shaped, very glabrous and shining above. Flowers purple, 4-6 in a whorl, forming long, leafy, unilateral, interrupted spikes. Calyx reddish, glabrous.

Woods and stony places in the mountain region. June-August.

**T. montanum** *L.* A short, bushy species with ligneous base and wiry stems. Leaves broadly linear, very shortly petioled, white tomentose beneath, entire. Flowers dirty yellow, in terminal heads. Calyx glabrous, pale green.

Dry hill-sides and rocky places in the lower mountains. June-August.

**T. aureum** *Schreb.* Ligneous at the base; less than a foot high, covered with soft down, yellow at the summit. Leaves sessile, oval or oblong, rugose above, whitish tomentose on both sides. Flowers yellow, or whitish yellow, in an oval or globular head of a golden colour.

Dry, stony hills, especially on limestone, rather rare. June-August. La Sainte-Baume (St. Pilon) and elsewhere in that range.

**T. Polium** *L.* Ligneous at the base, white tomentose. Leaves sessile, linear-lanceolate, crenate at top, rolled in at borders, white-felted on both sides. Flowers white, rarely purple, in dense, whitish, globular heads. Calyx felted, with short teeth, the upper one being obtuse. Sweet-scented.

Sandy hills and maritime sands. Very variable. May-August.

The following species of *Teucrium* also occur: viz. **T. Botrys** *L.*, **T. Scorodonia** *L.*, and **T. fruticans** *L.* The last named is an elegant shrub, 3 or 4 ft. high, often used for hedges. The leaves are white felted beneath; the flowers pale blue or mauve, large, stamens and style very prominent, and calyx white-felted outside.

It is probably not native on the French Riviera.

ACANTHACEÆ.

ACANTHUS *L.*

**A. mollis** *L.* A very handsome plant with very large pinnatifid-sinuate opposite leaves which are petioled. Flowers white with purplish veins, very large, sessile in long terminal spikes, furnished with large spiny bracts. Calyx glabrous with 4 unequal lobes, divided almost to the base into 2 lips. Corolla 1 lipped and 3-lobed with short tube.

Shady places, road-sides, and near water on the littoral. May-July. Perhaps introduced, but well naturalized in many places. The handsome leaves were used by the Greeks in designing the capitals of their pillars, etc.

VERBENACEÆ.

Stamens prominent; fruit fleshy; stem woody ..... VITEX.

Stamens included; fruit of 4 carpels; stem herbaceous ..... VERBENA.

Flowers in short globular heads. Fruit of 2 carpels. Plant creeping. LIPPICIA.

VITEX *L.*

**V. Agnus-castus** (Plate XXIII). A shrub or small tree of 6 to 12 ft., sweet scented. Leaves deciduous petioled digitate, of 5-7 lanceolate leaflets, white felted beneath. Flowers bluish or rose, small, in distinct whorls forming a long interrupted spike. The fruit is supposed to have peculiar sedative properties.

Waste ground, borders of torrents, and banks near the sea. June-September.

At Carqueiranne is a remarkable specimen, the only survivor of an old colony of these trees. The largest part of the trunk when cut had a circumference of nearly 5 ft. (Jahandiez.)

**Verbena officinalis** L. (Vervain) is very common in the south of France and flowers from June to October. Small lilac flowers in a long spike.

### LIPPIA L.

**L. nodiflora** Rich. A small creeping glabrous green plant. The flowering stems erect and bearing a small dense head of pink sessile flowers. Leaves oval-spathulate, entire at base, toothed above.

Borders of ditches and road-sides, well naturalized, and perhaps native in the Var. June-September.

### PLUMBAGINACEÆ.

Stem naked, simple; flowers in a bracteate head.....ARMERIA.  
Stem naked, branched; flowers in a panicle, unilateral cyme.....STATICE.  
Stem leafy, branched; flowers in a panicle.....PLUMBAGO.

### PLUMBAGO L.

**P. europæa** L. Plant 2-3 ft. high, much branched and leafy. Leaves rough at the edges, lower ones oboval petioled, middle ones embracing the stem by 2 rounded auricles; upper ones lanceolate. Flowers violet. Calyx-tube glandular, with 5 angles and 5 short teeth.

Dry, stony places, fairly common on the littoral. July-September.

### STATICE L. SEA LAVENDER.

(Descriptions kindly written by Mr. C. E. Salmon, F.L.S.)

**Statice sinuata** L. Plant scabrid, 15-50 cm. high. Root-leaves in a rosette, large, sinuate-pinnatifid or lyrate. Scape and branches stout, with 3 (very rarely 5) wings which are produced into linear-lanceolate entire bracts at each node. Flowers corymbose-paniculate with short dense secund spikes. Calyx conspicuous, bluish-mauve, with truncate undivided crenulate limb. Corolla small, pale yellow. Inner bract 2-3 toothed, cornigerous.

Sea-sands, very rare, and possibly now extinct, as this species and **S. Bonduellii** Lestib. are sold in a dried condition by florists. May-September.

Recorded for Iles d'Hyères (Var) and Nice (Alpes-Marit.).

**S. Limonium** L. var. **macroclada** Boiss. (= **S. serotina** Rich.). Plant glabrous, 30-50 cm. high, often glaucous. Leaves large, entire, broad and obovate-oblong and obtuse or narrow and more acute (= **S. angustifolia** Tausch.). Scape with long, remarkably patent and often recurved branches and branchlets. Flowers in a corymbose panicle with short and dense or longer and laxer spikes, usually scorpioid. Calyx with acute teeth. Corolla lilac. Spikelets smaller than in type.

Salt marshes and pastures near the sea. July-October. Especially common on the Plage d'Hyères and at Gien.

This is the southern and eastern form of the type; the latter occurs on the western and northern shores of France and is the common plant of Britain, where var. **macroclada** is unknown.

**S. Girardiana** Guss. (= **S. densiflora** Gir. non Guss.). Plant glabrous, 5-25 cm. high. Leaves small, acute, noticeably wedge-shaped and suddenly contracted into the petiole. Scape erect with short spreading branches, all fertile, bearing short, dense, patent spikes of crowded imbricate spikelets, forming a small unilateral panicle. Inner bract scarcely twice as long as outer. Calyx teeth short, obtuse. Corolla lilac, small.

Maritime sands and grassy places, rare. June-August. Les Sablettes near La Seyne (Var).

**S. virgata** Willd. Plant glabrous, 15-45 cm. high. Leaves irregularly crowded at base of scape, obovate or lanceolate-spathulate. Scape flexuous,

much branched with numerous lower sterile branches, branchlets rigid. Panicle elongated and irregular with long lax curved unilateral spikes of arcuate almost contiguous or distant spikelets. Inner bract almost four times longer than outer. Calyx arcuate with ovate-obtuse teeth. Corolla violet, large.

Sandy fields and salt marshes, very local. June-September. Near Hyères (Vieux Salins, Pesquiers, and Plage de Giens) and from Sanary to Brusç.

**S. minuta** L. Plant glabrous (or pubescent, when it is var. **pubescens** (Rehb.) non DC.), 3-15 cm. high, with stout woody root. Leaves in a rosette, and crowded below, small, imbricate, obovate or lanceolate-spathulate obtuse or retuse, thick, with revolute margins very conspicuous when dry. Scape weak and slender, with few straight sterile branches and small loose irregular panicle with lax non-contiguous spikelets. Inner bract three times longer than the acute outer. Calyx-teeth acute. Corolla small, violet.

Maritime rocks of the Var, local but sometimes abundant, as at Giens and the three Iles d'Hyères. June-August.

**S. pubescens** DC. Plant densely and softly hairy, 10-25 cm. high. Leaves irregularly crowded at base of scape, small, imbricate, obcordate-cuneate, retuse, thick with revolute margins, conspicuous when dry. Scape flexuous with numerous multifid sterile branches and short spikes of almost contiguous spikelets forming a rather close panicle. Inner bract three times longer than the blunt outer. Calyx-teeth obtuse. Corolla small, violet.

Often found with **S. minuta** but much scarcer. Fréjus, St. Cyr, Six-Fours, au Brusç. Rocks below the Capo at Bordighera. June-September.

**S. echioides** L. Annual, glabrous, 5-25 cm. high, root slender. Leaves in a rosette, obovate-obtuse, sometimes mucronate, tubercled above. Scape slender, flexuous, rather scabrid, with long erect or patent fragile branches, all fertile, bearing one (rarely two) flowered distant spikelets (rarely fascicled), forming a lax unilateral panicle. Inner bract 4-5 times longer than outer, tubercled. Calyx arcuate, teeth terminated by persistent hooked awns. Corolla small, pale pink (or lilac).

Uncultivated, sandy, and rocky places, rare. May-July. Near Fréjus, Gonfaron, Le Luc, Le Brusç, Toulon, St. Cyr, Presqu'île de Giens, Cannes, and Ventimiglia.

#### ARMERIA L. THRIFT.

**A. plantaginea** Willd. Plantain-leaved Thrift. Much like the common Thrift (**A. vulgaris** Willd.) which appears to be absent from the Riviera, but the leaves are much broader and often longer, usually with 3 or 5 parallel veins, the scape 1-2 ft. high, and the slender calyx-teeth are much longer.

Pastures and meadows in the mountain region. May-August.

**A. bupleuroides** Gren. et Godr. Resembling the last, but with more woody root-stock. Leaves almost glaucous, wavy at the borders. Flowers white. Calyx-tube with narrower ribs and triangular lobes.

Pastures and grassy places, rather rare, e.g. near Le Pradet. May-August.

**A. filicaulis** Boiss. Plant densely tufted, glabrous. Leaves linear, channelled, rough at the edges, the outer ones shorter and flatter. Scape very slender, a foot high. Head small. Flowers white or pinkish.

Sandy ground, very rare. July-October. Only on dolomitic hills near Solliès-Toucas (Var).

**A. alpina** Willd., with its handsome heads of bright rose-coloured flowers, grows on the top of the Mont de la Chens (Var), and in the Alpine region of the Maritime Alps, in both districts well above the altitudinal limit taken in this work.

#### PLANTAGINACEÆ.

This family has only 3 genera, of which one only is represented in the South of France. In **Plantago** the flowers are hermaphrodite, in terminal heads or spikes.



## PLANTAGO L. PLANTAIN.

**P. cynops** L. Shrubby. Stem woody at base, much branched. Leaves opposite or in whorls, linear. Heads ovoid, peduncled. Upper bracts lanceolate, mucronate, the others broadly ovate, concave, mucronate. Calyx-segments unequal. Bracts and sepals hairy. Corolla-lobes lanceolate-acuminate.

Dry and rocky places from the coast to the mountains. May-July.

**P. arenaria** W. et K. Herbaceous, annual, glandular-pubescent. Leaves linear, sessile. Heads ovoid, on axillary peduncles. Bracts suborbicular; the lower ones with a long leafy cusp. Calyx-segments variable.

Sandy places and sea-sands. May-September. Uncommon.

**P. Psyllium** L. Plant pubescent, viscous, with many glandular hairs. Stems branching. Leaves linear-lanceolate, opposite, entire or remotely toothed. Bracts lanceolate-acuminate. Calyx-segments like the bracts. Heads ovate. Corolla-lobes ovate-acuminate. An annual.

Uncultivated fields and road-sides, very common on the littoral. March-July. In flower on 23 February, 1913, in the Var.

**P. Coronopus** L. Buck's-horn Plantain. A very variable species. Annual or biennial. Leaves lacinate or bipinnatifid. Spikes cylindrical. Bracts cuspidate. Corolla-lobes ovate-acute. Capsules with 3 or 4 seeds. The var. **maritima** G. G. is very common in places; and var. **simplex** Decaisne, with slender filiform entire leaves, grows on salt marshes below Hyères.

Sandy places and fields and marshes near the sea. April-September.

**P. carinata** Schrader. Root-stock woody, with densely scaly obconical branches, very leafy at the summit. Leaves linear-filiform, curved, keeled throughout their length. Bracts ovate-lanceolate. Sepals with ciliate keel.

Rocks and sandy places in the hills, rare. June-September.

**P. subulata** L. Root-stock woody, with long branches covered with the scales of ancient leaves. Scape rather thick, stiff. Leaves linear, glabrous or ciliate, stiff, triquetrous at the top. Spike cylindrical or oblong, compact. Bracts and calyx somewhat rough, the latter fringed.

Rocks and hill-sides near the sea. May-July.

**P. Bellardi** All. Annual, 3-5 inches high. Leaves all radical, linear-lanceolate, 3-nerved, hairy. Spikes ovoid or oblong-cylindrical. Bracts lanceolate, acuminate, hairy. Lateral segments of calyx ovate-oblong, not keeled, suddenly and shortly acuminate. Seeds smooth.

Meadows and sandy, grassy places. April-June.

**P. Lagopus** L. Annual, taller than the last. Leaves all radical, lanceolate, gradually narrowed into a petiole, slightly toothed. Spikes ovoid at first, then longer and cylindrical. Bracts ovate or lanceolate-acuminate, with long hairs. Calyx-segments oblong, obtuse, hairy. Corolla-lobes hairy. The spike is very silvery on account of the long silky hairs.

Sandy places, borders of fields and roads, very common on the littoral. April-June.

The following species are also found in greater or less frequency:—

**P. crassifolia** Forsk. with linear fleshy leaves, intermediate between **subulata** and **maritima** L. on maritime sands; **P. serpentina** Vill., in rocky or grassy places in the hills; **P. lanceolata** L. common and very variable; **P. media** L. (Hoary Plantain); **P. major** L. (Greater Plantain), and **P. intermedia** Gilib., rarely in damp, sandy places. The true **P. maritima** L. does not appear to have been recorded from these coasts.

## GLOBULARIACEÆ.

## GLOBULARIA L.

**G. Alypum** L. Stems woody, erect, branching, 1-2 ft. high. Leaves oblong or lanceolate, mucronate, entire or with 2-3 teeth at the apex, tough, glaucous, and

persistent. Receptacle conical or subglobose, hairy. Involucral scales densely covered with white hairs. Corolla violet-blue, rarely pink, rather sweet-scented, in terminal heads, with sometimes axillary and sessile ones. Upper lip much shorter than the lower.

Dry, stony hills, especially on limestone. November-March, and sometimes nearly all the year.

**G. Willkommii** *Nym.* = **G. vulgaris** *L.* Stem herbaceous, simple, erect, glabrous, 4-12 in. high, with numerous alternate, small, sessile, lanceolate-acute leaves. Root-leaves large, oboval, emarginate or tridentate, narrowed into a long petiole. Flowers blue in small globular heads. Upper lip of corolla much shorter than the lower one. Strictly a sub-species of *vulgaris*.

Dry banks and hill-sides from the shore to the mountains. March-June.

**G. cordifolia** *L.* Stem woody, branching, creeping and rooting; with rosettes of numerous leaves, which are rather fleshy, cordate-cuneiform or tridentate at the apex and prolonged into a long petiole. Flowers blue or rarely white, in dense heads; upper and lower lips nearly equal. Receptacle conical, glabrous. In the Maritime Alps to within 800 m. of the sea. April-July.

**G. nana** *Lamk.* A smaller, prostrate, more woody plant, forming dense mats covered with shortly peduncled heads of blue flowers. Leaves very small and close, club-shaped, entire (not obcordate or tridentate). Calyx densely hispid. Often considered a var. of the last, but obviously distinct, and never found in the Alps nor in central Europe.

Rocky ridges in the limestone mountains. May-July. Mont Faron, Sainte-Baume, Morière near Solliès-Toucas, Montrieux, etc.

### Division III. APETALÆ OR INCOMPLETEÆ.

#### PHYTOLACCACEÆ.

##### PHYTOLACCA *L.*

**P. decandra** *L.* (Prov. *Rasiné*, Fr. *Raisin d'Amerique*). A glabrous and often purplish plant, 3-6 ft. high. Leaves ovate-lanceolate, large, alternate. Flowers whitish-pink, in long opposite leafy clusters. Fruit black or blackish-red, of 10 ridges or carpels.

Naturalized here and there in waste and cultivated ground. June-August.

**P. dioica** *L.* This S. American tree does well in the 3 Iles d'Hyères.

#### AMARANTACEÆ.

Stamens free. Leaves oval or rhomboidal, alternate ..... AMARANTUS.

Stamens united at base. Leaves linear, fascicled..... POLYCNEMUM.

##### AMARANTUS *L.*

**A. deflexus** *L.* Stems diffuse, pubescent. Leaves somewhat rhomboidal. Clusters axillary and spikes terminal. Bracts ovate-acute, scarcely as long as the perianth of 3 mucronate sepals. Capsule indehiscent, ellipsoid.

Common in waste places, at foot of walls, etc. June-October.

**A. retroflexus** *L.* Stem erect, pubescent. Leaves ovate or oblong petioled. Spikes composite, terminal. Sepals 5, obtuse, mucronate, longer than the dehiscent capsule. Plant pale green. Bracts spinescent, twice length of perianth. Waste places, gardens, rubbish heaps, etc., common. August-Sept.

**A. patulus** *Bert.*, **A. albus** *L.*, **A. Blitum** *L.*, and **A. silvestris** *Desf.*, also occur in waste places.

##### POLYCNEMUM *L.*

**P. majus** *A. Br.* A glabrous annual with spreading and usually recumbent stem covered with narrow-linear, almost imbricate, spiny leaves. Flowers minute, very numerous throughout the length of the stem.

Stony or sandy uncultivated fields. June-August.

**P. arvense** L., a smaller perennial species is rarely seen in similar places. The leaves are shorter and thinner; and the fruit no longer than the perianth.

### CHENOPODIACEÆ.

Tribe I. ATRIPLICEÆ. Stem leafy. Flowers 1-sexual, male 3-5—female 2-sepalous.....ATRIPLEX.

Tribe II. CHENOPODIEÆ. Stem leafy. Flowers bisexual, or if unisexual perianths of males and females similar.

Flowers 2-sexual. Utricle membranous .....CHENOPODIUM.

Flowers 2-sexual. Utricle striate and hard above .....BETA.

Tribe III. SALICORNIEÆ. Stem leafless, jointed. Flowers 2-sexual.

Albumen scanty; embryo conduplicate .....SALICORNIA.

Tribe IV. SUÆDEÆ. Stem leafy. Sepals 4-5, not winged at the back. SUÆDA.

Tribe V. SALSOLÆ. Stem leafy. Sepals 4-5, transversely winged in fruit. SALSOLA.

Tribe VI. CAMPHOROSMEÆ. Flowers with no bracteoles; plants pubescent.

Leaves setaceous. Stamens 4. Stigmas 3. Perianth with 5 unequal teeth. CAMPHOROSMA.

Leaves small, narrow. Stamens 5. Stigmas 2. Perianth with dorsal appendages .....KOCHIA.

### ATRIPLEX L.

**A. Halimus** L. A silvery-grey shrub, 3-6 ft. high. Leaves alternate, entire, oval or oblong, shortly petioled, silvery-greenish-white, persistent. Flowers yellowish, in long spikes forming a terminal panicle, rather leafy at the base.

Banks and road-sides near the sea, often planted to form hedges by road-sides and in gardens. August-September.

**A. portulacoides** \* L. (leaves mostly opposite, oblong or strap-shaped, entire), **A. Tornabeni** \* Tin., **A. rosea** L., **A. hastata** L. (leaves hastate and truncate at base), **A. patula** L., and **A. littoralis** \* L. (leaves narrow, usually entire) are often found on the littoral; those marked \* always near the sea.

### BETA L.

**B. maritima** L. Sea Beet. A stout, glabrous sea-side plant. Leaves large, thick, entire, oval-oblong, petioled; upper ones small and narrow. Flowers solitary or in pairs, green, in a long interrupted spike. The ripe perianth forms a hard angular mass, with one horizontal seed.

Banks near the sea and occasionally inland. June-September.

### CHENOPODIUM L. GOOSE-FOOT.

In addition to all the British species, which are more or less common as weeds in fields and waste places, several introduced plants are naturalized on the Riviera, such as **C. multifidum** L. (from S. America) and **C. ambrosioides** L., a robust leafy species found near Toulon and on Porquerolles.

### CAMPHOROSMA L.

**C. monspellaca** L. Small under-shrub, 1-2 ft. high, hairy, with numerous stems and smelling of camphor. Leaves setaceous, fascicled, hairy; flowers axillary, whitish.

Dry banks and maritime rocks, fairly common on the littoral. July-September.

### KOCHIA Roth.

**Kochia hirsuta** Nolte. Banks near the sea at the Pesquiers near Hyères, and also near Toulon, August-September. It is a straggling greyish hairy



annual, much branched at the base, and the small leaves are linear, obtuse, fleshy, and soft. Ripe perianth very hairy, with obtuse lobes.

**SALICORNIA L.** MARSH-SAMPHIRE.

**S. herbacea L.** Glasswort. A glabrous, bright green or reddish, succulent, erect annual or biennial, 6-12 in. high, with erect jointed branches ending in a spike  $\frac{1}{2}$  to 1 in. long. Flowers very minute, 6 in each segment, 3 in a triangle on each side.

Salt marshes and near brackish water. August-October.

**S. perennis Mill.** = **S. radicans Sm.** (root-stock perennial, woody and creeping; plant often reddish), **S. fruticosa L.** (bushy, erect, 1-3 ft. high), and **S. glauca Delile** (with strongly tubercled seeds) are found in similar situations, sometimes growing together, as at la Plage d'Hyères and la Plage de Giens.

**SUAEDA Forsk.** SEABLITE.

**S. fruticosa Forsk.** Shrubby Seablite. A branching, erect, shrubby plant, 1-3 ft. high, with woody stems. Leaves numerous, linear, rounded at base and tip, thick and succulent, pale green. Flowers small, sessile in the leaf axils. Styles 3, rather longer than the perianth. Seed vertical.

Places near the sea, rare. June-September. Formerly near Toulon and near Antibes but perhaps extinct.

**S. maritima Dumort.** A much smaller annual or biennial species with herbaceous stem, leaves tapering at the base, styles 2 and seed horizontal; it is common on the littoral of the Var and again east of Nice.

**S. splendens G. G.** is a rare glaucous, pulverulent species with acuminate mucronate leaves found at Castigneaux near Toulon, and in the salt marshes below Hyères. June-September.

**SALSOLA L.**

**S. Kali L.** Prickly Saltwort. A glabrous annual, 6-12 in. high, with hard, much-branched stem. Leaves ending in a stout prickle, the lowest linear, slightly enlarged at the base, the uppermost shorter and broader and nearly triangular. Flowers sessile in the upper axils.

Sea-sands. Common in the Var and from Cannes to Menton. August-September.

**S. Soda L.** Annual, glabrous and glossy. Stem robust, branched from the base. Leaves fleshy, soft, long, half cylindrical, sub-obtuse or ending in a fine spine. Flowers solitary or in pairs. Fruiting perianth big, inflated, membranous, with lanceolate lobes and short dorsal wings.

Salt marshes, borders of ditches, and brackish water. June-September.

POLYGONACEÆ.

Sepals 5, subequal. Fruit compressed or 3-gonous, wingless .....POLYGONUM.  
Sepals 6, 3 inner ones much larger. Fruit 3-gonous .....RUMEX.

**RUMEX L.** DOCK.

**R. intermedius DC.** Plant  $1\frac{1}{2}$ -2 ft. high. Leaves lanceolate, sagittate, narrow, with long auricles, which are much spreading and often bifid. Flowers whitish, in a dense, short panicle.

Dry, rocky places and stony hill-sides. May-June.

**R. bucephalophorus L.** A small slender annual, 3-12 in. high, often reddish. Leaves small, oval-lanceolate, entire. Inner divisions of perianth toothed and spiny at the base.

Barren fields, sandy hill-sides; common and variable. April-July.

The following species of Rumex are more or less common:—

**R. scutatus L.**, only in stony places in the hills; **R. acetosa L.**, **R. Acetosella L.**, **R. pulcher L.**, **R. Friesii G. G.**, **R. sanguineus L.**, **R. conglomeratus Murr.**, and **R. crispus L.**

## POLYGONUM L. KNOT-GRASS.

**P. maritimum** L. Sea Knot-grass. Plant prostrate, woody, stout and rigid. Leaves thick, often glaucous, especially beneath, lanceolate or oblong, slightly rolled in at the border. Stipules large, scarious and nerved. Nuts rather large, smooth and shining. The root often penetrates several feet into the sand.

Sea-sands, common on the coast. May-September.

**P. Robertii** Loisel. = **P. Raii** Bab. Less woody and stiff and usually rather greener, like a young specimen of the last but with less shining and smaller nuts. Leaves often less crowded and flat.

Sea-sands and sometimes in salt marshes. June-September.

An article on this plant by M. E. Reynier appeared in the "Annales de la Soc. d'Hist. Nat. de Toulon" for 1913.

**P. romanum** Jacq. = **P. flagellare** Bert. Plant 1-3 ft. long, rather glaucous, with thick and twisted woody stock, sending up several slender stems which are naked below. Leaves linear-lanceolate, flat. Nuts small, as long as the perianth.

Sea-sands, road-sides, and sandy places. July-September.

The following also occur:—

**P. Convolvulus** L. in fields; **P. amphibium** L., **P. lapathifolium** L., **P. Persicaria** L., **P. Hydropiper** L., and **P. serrulatum** Lag., in wet places; **P. Bellardi** All., **P. pulchellum** Loisel., and **P. aviculare** L. (the Common Knot-grass) in many forms.

## THYMELÆACEÆ.

Perianth deciduous; fruit fleshy ..... DAPHNE.

Perianth persistent, enclosing the dry fruit ..... PASSERINA.

PASSERINA L. (*Thymelæa* Endl.).

**P. hirsuta** L. Under-shrub, 1-3 ft. high, much branched, covered with whitish tomentum. Leaves oval, very small and imbricate, obtuse, thick and fleshy, concave, whitish felted beneath. Flowers very small, terminal, silky without, yellowish within. Fruit ovoid, glabrous.

Sandy or rocky places on or near the coast. September-May.

Very distinct from the other species, none of which have minute oval imbricate leaves. They comprise **P. annua** Wiks., **P. Thymelæa** DC., **P. Tarton-raira** DC. (Ile du Levant), and **T. dioica** All. (in the mountains).

## DAPHNE L.

**D. Gnidium** L. (Plate XXIV). A small shrub, 2-6 ft. high, with erect, stiff stems and branches which are smooth, brown and puberulent at the summit. Leaves linear-lanceolate, alternate, mucronate, glabrous, 1-nerved. Flowers white, scented, in terminal panicles; pedicels and peduncles whitish; perianth silky white, with short oval lobes. Berry ovoid, red.

Woods, hill-sides, and uncultivated places on the littoral. June-October.

The following 4 species are found in the lower mountains:—

**D. Cneorum** L. (flowers pink, sweet-scented, April-July), **D. alpina** L. (flowers creamy-white, scented, leaves hairy, rather large, April-June), **D. Mezereum** L. (flowers pink, appearing in March before the leaves), and **D. Laureola** L., Spurge-laurel (flowers green, leaves very large, glabrous and leathery, a shrub of 2-4 ft.). The last is fairly common in the famous forest of Sainte-Baume.

## LAURACEÆ.

## LAURUS L.

**L. nobilis** L. Bay-tree. Leaves broadly lanceolate or elliptic, persistent, leathery, aromatic. Flowers small, yellowish, in little axillary clusters. Berry black. This well-known tree attains a height of 30 ft. or more, as e.g. near

Hyères in the woodland valleys and especially in the Gapeau Valley, where it is very abundant and where one tree we photographed is quite 40 ft. in height.

Woods and hill-sides and borders of streams; here and there well naturalized, if not indigenous. March-April.

## ELÆAGNACEÆ.

## HIPPOPHÆ L.

**H. rhamnoides** L. Sea Buckthorn. A spiny olive-coloured shrub, 3-10 ft. high. Leaves linear, glabrous above, silvery with a scaly scurf beneath, more or less rusty on the young shoots. Berries small, orange-yellow. Flowers small, greenish, at the base of the young branches.

Beds of torrents and on screes, rare. March-June.

## LORANTHACEÆ.

Parasitic shrub, with well-developed leaves and fruit as large as a pea.

VISCUM.

Parasitic small shrub, with leaves reduced to short triangular scales, and fruit only 2 x 1 mm.; ovoid .....ARCEUTHOBIMUM.

## VISCUM L.

**V. album** L. Mistletoe. This well-known parasite is rather rare on the Riviera, and found chiefly on **Pinus sylvestris**, **Abies pectinata**, and **Sorbus Aria**. The plant on **P. sylvestris** is called **V. laxum** Boiss. and has narrower leaves and a more oblong and rather yellowish berry. It is considered a distinct species by some botanists. Mistletoe is a dioecious shrub with minute yellowish flowers and yellowish-green oblong obtuse leathery leaves. Berries greenish-white, transparent. In the Var it is found occasionally on Beech, Yew, Sorbus, Maple, and **Abies pectinata** (Jahandiez).

On trees chiefly in the hills and lower mountains. March-June.

## ARCEUTHOBIMUM M. B.

**A. Oxycedri** M. B. A very small under-shrub, 2-8 in. high, glabrous, yellowish-green. Stems jointed, dichotomous. Flowers very small, yellowish. Leaves reduced to small opposite triangular scales. Berry dry, small, ovoid, greenish. Parasitic upon **Juniperus Oxycedrus**, **communis**, and **phœnicea**; rare. September-October. Aups, route de Bauduen, behind St. Auban and Montfort, and at one or two other places in the Var.

## SANTALACEÆ.

Flowers hermaphrodite; stamens 5; fruit dry.....THESIUM.

Flowers dioecious; stamens 3-4; fruit fleshy .....OSYRIS.

## THESIUM L. BASTARD TOAD-FLAX.

**T. divaricatum** Yan. Root woody and rather thick. Stems numerous, wiry, spreading. Leaves linear, acute, 1-nerved. Flowers greenish-white, in a pyramidal panicle; bracts unequal, 2 or 3 below each flower. Perianth-lobes white, toothed near the base.

Dry, stony hills and woods on the littoral. June-September, in fact we have sometimes seen this in flower throughout the winter, though generally they are stunted and cropped specimens.

## OSYRIS L.

**O. alba** L. An evergreen under-shrub, 18 in. to 3 ft. or more, glabrous, much branched, slender and angular. Leaves persistent, linear or lanceolate, acute, leathery. Flowers small; the male yellow, in clusters on very short branches; the female greenish, solitary at the ends of longer leafy branches. Fruit as large as a pea, orange-red.

Hedges, woods, borders of streams, roads and in shady places, common throughout the littoral. May-August.



## CYTINACEÆ.

## CYTINUS L.

**C. Hypocistis** L. Parasitical upon the roots of *Cistus*. Stem thick, fleshy, 2-6 in. high, yellowish or reddish, covered with imbricate broad scales which take the place of leaves. Flowers yellow or reddish, sessile at the summit of the stem, in a terminal head mixed with bracts. Upper flowers male, lower ones female. Berry soft, pulpy, many-seeded, 1-celled.

Fairly common on *Cistus* in places on the littoral. April-May.

The var. **β. Kermesinus** Guss. is parasitic upon *Cistus albidus* and is less common.

## ARISTOLOCHIACÆ.

Calyx campanulate, regularly 3-cleft. Stamens 12 .....ASARUM.

Calyx tubular, mouth oblique. Stamens 6 .....ARISTOLOCHIA.

## ASARUM Tournef.

**A. europæum** L. Leaves usually 2 only, reniform or orbicular cordate, on long hairy petioles. Peduncle short, 1-flowered. Flower greenish-purple or brown, hairy,  $\frac{1}{2}$  inch long and divided into 3 broad pointed lobes.

Woods in the Maritime Alps, rare. April-May.

## ARISTOLOCHIA L. PITCHER-PLANT.

**A. Clematitis** L. Root-stock creeping. Stems erect, 1-2 $\frac{1}{2}$  ft. high. Leaves cordate, large, with long petioles. Flowers axillary in clusters of 3-6 on peduncles much shorter than the leaves. Reflexed hairs within the tube; capsule pear or fig-shaped.

Hedges and shady places. May-July.

**A. Pistolochia** L. (Plate XXIV). Root-stock short, with bundles of cylindrical fibres. Leaves broadly cordate, emarginate, on very short petioles. Flowers axillary, longer than the leaf, with peduncles twice as long as the petiole; tube greenish-red, tongue purple-brown.

Rocky hill-sides, etc., not uncommon. April-June.

**A. rotunda** L. Root-stock globular. Leaves cordate, emarginate, nearly sessile, with round lobes at the base embracing the stem. Flowers axillary, solitary, on short peduncles. Perianth limb purplish-brown, with greenish stripes at the back. Capsule ovoid.

Borders of stony fields and road-sides. April-June.

**A. pallida** Willd. Root-stock subglobular. Leaves cordate-ovate, petioled, obtuse or emarginate, with smooth entire margin. Flowers axillary, solitary, greenish-yellow striped with purplish-brown, on very short peduncles. The tube is enlarged at the summit.

Grassy woods and stony places. May-June.

**A. longa** L. Root-stock fusiform or cylindric. Leaves cordate-ovate, sub-petiolate, entire; peduncle equal to the petiole. Flowers axillary, solitary, greenish-brown, with purple tongue, rather large. Capsule-ovoid or pear-shaped.

Borders of fields, very rare. April-May. Fréjus, Collobrières, near Nice, and above Menton, etc.

## EUPHORBIACEÆ.

Tribe I. EUPHORBIEÆ. Involucre calyciform, with many male monandrous flowers surrounding one female. Perianth minute or 0 .....EUPHORBIA.

Tribe II. BUXEÆ. Flowers distinct. Stamens opposite the petals. Ovules 2 in each cell .....BUXUS.

Tribe III. CROTONEÆ. Flowers distinct. Stamens mostly opposite the sepals. Ovules solitary in each cell.

Leaves opposite; capsule 2-celled .....MERCURIALIS.  
 Leaves alternate; capsule 3-celled .....CROZOPHORA.

### BUXUS L. Box.

**B. sempervirens L.** Common Box. The box is common on most of the limestone hills in the middle or northern parts of the Var, and on the northern sides of many of the mountains in les Alpes-Marit. It flowers in March or April.

The var. **lancifolia Manceau** (with larger more robust leaves) grows with the type in the Gapeau Valley north of Hyères.

### CROZOPHORA Nicker.

**C. tinctoria Fuss. = Croton tinctorium L.** Annual. Leaves large, rhomboidal, sinuate, greyish-green. Flowers monœcious, yellowish. Capsule scaly, pendent.

Stony places and cultivated fields on the littoral, uncommon. June-September.

### MERCURIALIS L. MERCURY.

**M. annua L.** is extremely common in cultivated fields and waste places. February-October. **M. ambigua L.**, with monœcious flowers, is not uncommon in similar places, and flowers throughout the year. **M. perennis L.**, Dog's Mercury, grows in damp woods and shady places in the hills, as e.g. in the famous Forest of Sainte-Baume, and at Montrieux, etc.

### EUPHORBIA L. SPURGE.

\* *Leaves opposite.*

**E. Chamæsyce L.** A very small, slender, recumbent annual. Leaves shortly petioled, suborbicular, small. Stipules setaceous. Flowers solitary, axillary. Capsule trigonous, glabrous.

Fields and stony or sandy places, uncommon. June-October.

**E. Peplis L.** Purple Spurge. A small glabrous, fleshy annual; glaucous or purplish. Stem short, dividing into an umbel of 3 or 4 rays, so that the plant appears to consist of repeatedly forked flowering branches, almost prostrate on the sand. Floral leaves opposite, very oblique, broadly oblong, obtuse and thick, with very small stipules at their base. Capsule glabrous and smooth.

Sea-sands, uncommon, except between Cannes and Menton. July-September.

**E. Lathyris L.** Caper Spurge. A tall, stout annual or biennial, 2-4 ft. high, smooth and glaucous. Stem, leaves narrow-oblong, getting broader higher in the stem. Umbel of 3 or 4 long forked rays, with large ovate-lanceolate floral leaves; glands of involucre crescent-shaped, the points short and blunt. Capsule large and smooth. Seeds wrinkled.

Cultivated ground, rather rare. June-July.

\*\* *Leaves alternate or scattered, without stipules; flowers more or less in an umbel.*

**E. dendroides L.** Tree Spurge (Plate XXIV). Stems woody, much branched, forming round bushes often 6 ft. high. Branches reddish, marked by the scars of the old leaves. Leaves linear-lanceolate. Umbel 3-8 rayed. Floral leaves rhomboidal. Glands 4, yellow, oval, emarginate or irregularly toothed. Capsule smooth.

Maritime cliffs and rocks and rocky hills near the sea. Local. April-June.

**E. spinosa L.** Spiny Spurge. Stems woody though slender, much branched, forming dense round tufts or small bushes less than 1 ft. high; the old leafless branches having the appearance of long spines. Leaves small,

lanceolate or oblong-lanceolate. Umbel 3-5 rayed, forked. Glands 5, oval, yellow. Capsule covered with short protuberances or warts. Seeds smooth.

Stony banks and rocky places. April-June.

**E. verrucosa** Jacq. Plant rather downy, about 1 ft. high. Woody at the base. Leaves oblong, toothed. Umbel 5 rayed, floral bracts obovate. Glands yellow. Capsule covered with little cylindrical warts.

Woods, meadows, and hill-sides, rather rare. May-July.

**E. flavicomma** DC. Differs from the last by the shorter rays of the umbel, by its smaller stature, more woody stem at the base, and its capsule with hemispherical warts.

Dry hill-sides, stony places, and woods. April-June.

Monsieur E. Reynier of Toulon wrote an article on "*L'Euphorbia flavicomma* DC. et l' *E. verrucosa* Jacq. race *Candolleana* Reyn., en Provence" in "*Bull. Soc. Bot. de France*" (1910), pp. 309-14, and we believe he is still engaged in investigating a curious Spurge belonging to this group (very yellow in colour and shrubby, though short) which the writer found a large colony of on the railway bank near Pont de la Clue (Var), and which we were unable to match exactly in the spring of 1913.

**E. dulcis** Jacq. Stem upright, 1-2 ft., often reddish. Leaves lanceolate or oblong-lanceolate, sometimes toothed. Umbel of 5 forked rays. Floral bracts ovate-triangular. Glands 4, greenish at first, then crimson or purple. Capsule usually crimson, with short, obtuse, unequal warts on the angle.

Woods and shady places in the hills and lower mountains. May-July.

**E. pubescens** Desf. Downy Spurge. Stem upright, 1-2½ ft. Leaves lanceolate, toothed, hairy, green. Umbel of 5 rays. Floral bracts oval-rhomboidal. Capsule trigonous, deeply furrowed, warty and hairy. Glands yellow. Plant covered with greyish down.

Damp places, borders of streams. May-July.

**E. pilosa** L. Hairy Spurge. Plant erect, 1-2½ ft., hairy or glabrescent; stem robust, branched at the top. Leaves soft, close, oblong-lanceolate, toothed or almost entire. Umbel yellow when in flower, 4-6 rayed. Glands entire. Floral bracts oval, obtuse. Capsule subglobular, sometimes glabrous, smooth or slightly warty.

Woods and damp places. April-July.

**E. taurinensis** All. Stem erect, a foot high. Lower leaves obovate-cuneate, emarginate, upper ones lanceolate or linear-lanceolate and larger. Umbel of 3-5 forked rays. Floral bracts triangular-cordate. Glands 4, with short horns. Capsules with angles finely granulated, rough. Plant glabrous.

Fields, vineyards, and stony olive terraces, etc., in the hills. May-August.

**E. biumbellata** Poir. Stems erect, 1-2½ ft. Leaves linear-lanceolate or oblong, the upper ones 3-nerved. Umbel double or triple (i.e. 2 or 3 umbels, one above the other) with many rays. Floral bracts semi-orbicular. Glands 4 or 5 with club-shaped horns. Capsule with raised dots. Seeds irregularly furrowed.

Hills and woods not far from the sea. April-June.

**E. serrata** L. Stems erect, a foot high. Leaves ovate-acuminate, lanceolate or linear-lanceolate, those of the barren stems often linear, all dentate or serrate. Umbel of 3-5 forked rays, greenish-yellow and handsome. Floral bracts cordate, dentate, glands 2-3, broad, truncate with jagged edge, yellow, and brown at base. This handsome plant of a brilliant yellow-green, with darker leaves, is well worth cultivating in gardens; but it is very variable in nature.

Fields, waste ground, and road-sides, common. May-July.

**E. Cyparissias** L. Stems erect, 6-18 in., reddish at the base. Leaves linear, narrow, setaceous and almost imbricate, glabrous; those of the barren branches longer and more crowded. Umbel of many forked rays. Floral bracts broadly ovate-triangular, turning red in withering. Glands 4, crescent-shaped. Capsule rough with minute dots.



Borders of fields and roads, very common and extending into the high mountains. April-September.

**E. terracina** *L.* Stems erect, glabrous, 6-20 in. Leaves linear-oblong, toothed above, green. Umbel of 2-5 forked rays. Floral bracts broadly ovate-rhomboidal, mucronate, toothed. Glands greenish, cross-shaped, with long setaceous horns. Capsule trigonous, smooth.

Sea-sands and hill-sides near the coast. April-September.

**E. nicæensis** *All.* Plant 9-24 in. high, glabrous and very glaucous, or often reddish. Stems nearly woody at base and naked below. Leaves oblong-lanceolate apiculate, thick, very entire. Floral bracts ovate-orbicular.

Arid places and hill-sides, fairly common on the littoral. May-July.

**E. Paralias** *L.* Sea Spurge (of Britain). Stems erect, bushy, woody at base and densely covered with leaves in upper part. Leaves oblong-lanceolate. Umbel of 3-5 forked rays. Floral bracts kidney-shaped. A glabrous and glaucous plant.

Sea-sands, fairly common. May-September.

**E. Pithyusa** *L.* In habit like the last, glabrous and glaucous and very shrubby, 1-2 ft. high, woody at base. Leaves very close or imbricate, lower ones turned down, leathery, linear or lanceolate-acuminate, cuspidate. Umbel of 5-8 short forked rays. Bracts oval, mucronate. Glands slightly emarginate, with short obtuse horns. Capsule glabrous.

Sands and rocks by the sea, rare and local, but abundant in certain places, e.g. Almanarre, Plage de Giens, Iles d'Hyères, below Bormes, etc. May-August.

It occurs again near Genoa.

**E. segetalis** *L.* Annual (usually), 1-1½ ft. high, glabrous and rather glaucous. Stem erect, usually simple. Leaves linear or linear-lanceolate, umbel of 5 rays 1-3 times branched. Bracts suborbicular; mucronate glands cross-shaped, with long horns. Capsule glabrous, finely granular at the back of each division.

Fields and dry places, very common, especially on the littoral. April-October.

**E. Characias** *L.* (See Plate VII). A tall, robust plant, 2-4 ft. high. Stems woody below, thick, top portion nodding when young. Leaves long and lanceolate narrowing at the base, crowded on the upper part of the stems. Umbel with many forked rays. Floral bracts emarginate and united to form a cup under the flower-heads. Glands 4, usually dark purplish, with short horns. Capsule covered with soft hairs.

Woods, hill-sides, and borders of roads, very common. March-May.

There are over 30 species of Euphorbia on the Riviera and neighbouring mountains. Among those not already mentioned are the rare **E. Canuti** which grows on the mountains on both sides of the Roja valley at the eastern limit of our district; **E. Preslii** of American origin (leaves opposite), is established near Ventimiglia; **E. hibernica** grows in mountain woods of the Maritime Alps, and the following commoner kinds are widely spread, viz.: **E. helioscopia**, **E. platyphylla**, **E. stricta**, **E. Peplus**, **E. peploides**, **E. exigua**, **E. falcata**, **E. Esula** (in the hills), **E. amygdaloides**, and **E. Gerardiana**.

## URTICACEÆ.

Leaves opposite, with stinging hairs.....	URTICA.
Leaves alternate, with simple hairs.....	PARIETARIA.
Leaves mostly alternate, very glabrous. Stamens 12-20.....	THELIGONUM.
Leaves palmate, stem climbing.....	HUMULUS.

THELIGONUM *L.*

**T. Cynocrambe** *L.* A small green fleshy annual growing in clumps on banks and under hedges. Leaves oval, entire, the lower ones opposite, upper

ones alternate. Stipules membranous. Flowers monœcious, 3-4 axillary, sessile, small and green. Leaves petioled.

Stony places in fields and road-sides and on old walls, common and often overlooked in the littoral. March-May.

### HUMULUS L.

**H. Lupulus L.** The Hop is found in hedges and by streams and other shady places especially in the hills. June-August.

### PARIETARIA L. PELLITORY-OF-THE-WALL.

**P. ramiflora Mœnch.** This is much commoner in the south than the British **P. officinalis** (Pellitory-of-the-Wall). The leaves are narrowed at each end, the stems erect, and the perianth more bell-shaped.

Rocks and old walls, very common throughout. May-October.

**P. lusitanica L.** A small annual species with slender stems and small oval petioled leaves, 3-nerved at the base. Flowers in small bundles of 3-5. Bracts linear. Perianth-segments oval.

Rocks and old walls in the Var. April-June.

### URTICA L. NETTLE.

**U. membranacea Poir.** Differs from the common stinging nettles (**U. dioica** and **U. urens**) by its unisexual or monœcious clusters, the males being longer. The flowers inserted only on the upper face of the membranous rachis. Clusters peduncled. Leaves large, broad, and thin.

Waste places near houses and at the foot of walls. April-June.

**U. urens L., U. dioica L., and U. pilulifera L.** (female flowers in globular peduncled heads) are quite common.

### CELTACEÆ. (Sometimes considered a tribe of Urticaceæ.)

#### CELTIS L.

**C. australis L.** A biggish tree. Leaves nettle-like, oval-lanceolate, toothed, rough. Flowers hermaphrodite, axillary; solitary-pedicelled. Fruit black, as large as a big pea, with one nut.

Often planted, but probably native in rocky places here and there. March-May.

### ULMACEÆ.

#### ULMUS L.

**U. campestris L.** The common Elm is often planted and grows spontaneously here and there, and flowers from February to April according to situation, etc. The var. **suberosa K.** is also recorded from the Var.

**U. montana With. = U. glabra Huds.** Wych Elm. This is not recorded by Ardoino ("Fl. des Alpes-Marit.") nor by Albert and Jahandiez for the Var; but without having examined specimens we believe it occurs in both departments. In the Gapeau Valley and by the R. Rubaud near Hyères, this tree probably appears. Mr. Bicknell has found it in woods west of Monte Alto. Prof. Penzig believes it has not been seen before on the southern side of the central chain of the Maritime Alps, but only **U. diffusa** and **U. campestris**; but Bicknell has no doubt about his plant, "the leaves being extremely scabrous on the upper surface, bearded in the axils of the nerves underneath, lengthily and abruptly acuminate, and less deeply toothed than **U. effusa**" ("Fl. of Bordighera," p. 254).

**Morus alba L. and Morus nigra L.,** the white and black Mulberry trees, are often seen cultivated, the latter chiefly in the lower mountains.

### CERATOPHYLLACEÆ.

**Ceratophyllum demersum L. and C. submersum L.** are found in pools near Fréjus. June-July.



1



2



3



4



5

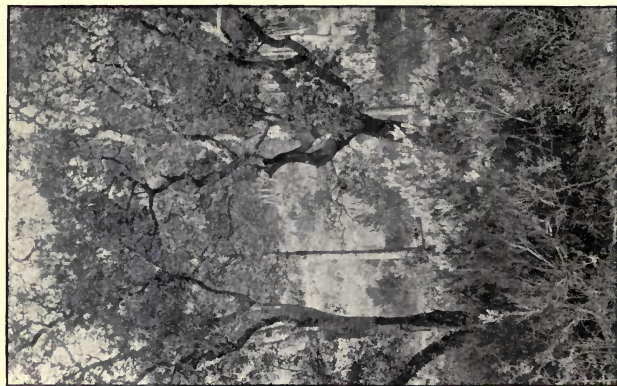
PLATE XXIV.

1. *Daphne Gnidium*. 2. *Aristolochia pistolochia*. 3. *Euphorbia dendroides*.  
4. *Smilax aspera*. 5. *Gladiolus segetum*.









Cork-Oaks and Tree Heath on Triassic soil near Carqueiranne, in March. Aleppo Pines on adjoining outcrop of limestone

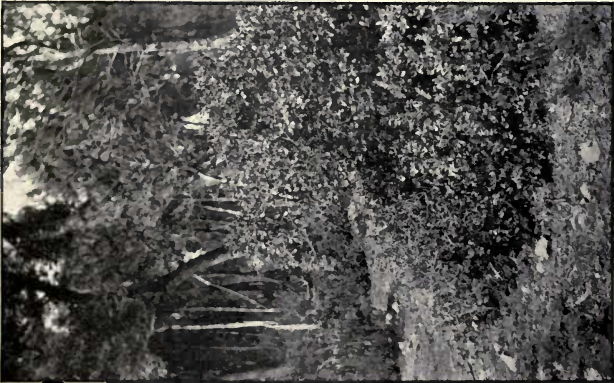


Cork-Oaks in January near Hyères. Maquis of *Quercus coccifera*, *Cistus albidus*, Rosemary, etc.





Maquis of Tree Heath (*Erica arborea*), *Arbutus*,  
*Calycotome*, etc., in wood of *Pinus Pinaster* on  
siliceous soil near Cap de Léoube, Var



Maquis of Lentisque (*Pistacia Lentiscus*), *Quercus*  
*coccifera*, *Cistus*, etc., beneath small Aleppo Pines  
on limestone near Carqueiranne



## CALLITRICACEÆ.

**Callitriche hamulata** Kütz. and **C. stagnalis** Scop. are found in pools and streams in several places in the Var.

## ARTOCARPACEÆ.

## FICUS L.

**F. Carica** L. Common Fig. The Fig is cultivated throughout the Riviera except in the mountains, and is apparently wild or naturalized here and there by streams, in woods, and rocky places. May-July.

An interesting historical and descriptive account of "The Common Fig Tree" was published by Mr. Clarence Bicknell of Bordighera in 1912, after he had given a short lecture on the subject from information collected during many years.

## JUGLANDACEÆ

**Juglans regia** L. The Walnut (orig. from the East) is often cultivated and occasionally appears subsynchronous.

## CUPULIFERÆ.

Tribe I. BETULEÆ. Styles 2. Fruit winged.

Stamens 2; scales of ♂ spike thin, deciduous 3-fid ..... **BETULA**.

Stamens 4; scales of ♂ spike persistent, woody ..... **ALNUS**.

Tribe II. QUERCINEÆ. Styles 3-9. Fruit not winged.

♂ catkins slender. Styles 3-4, short ..... **QUERCUS**.

♂ catkins globose. Styles 3, filiform ..... **FAGUS**.

♂ catkins long. Involucre of capsule very spiny. Styles 4-9 ..... **CASTANEA**.

Tribe III. CORYLEÆ. Styles 2. Fruit not winged.

♀ spike minute, with few brown scales and 2 crimson styles ..... **CORYLUS**.

♀ spike in a loose cluster with many leafy scales; male catkin solitary ..... **CARPINUS**.

♀ spike large (4 cms.), cone-shaped; male catkins in clusters ..... **OSTRYA**.

**BETULA** Tourn.

**B. alba** L. Silver or Common Birch. This tree is found on some of the northern slopes and colder places in the Maritime Alps. April-May.

**ALNUS** Gaertn.

**A. glutinosa** Gaertn. Alder. Damp woods and by streams and rivers. Feb.-April. Not uncommon in shady valleys such as that of the Gapeau (Var).

**CASTANEA** Mill.

**C. sativa** Scop. Sweet or Spanish Chestnut. Mountain woods chiefly on siliceous soil, and in the lower Maritime Alps at about 700 metres it forms beautiful glades, as e.g. at San Dalmazzo di Tenda. May-June. In Liguria it extends from about 300 to 1000 m. (Bicknell).

**FAGUS** L.

**F. silvatica** L. Beech. Mountain woods, as e.g. in the Bois de la Sainte-Baume, where there are very fine specimens; in the north of the Var, and the montane region of les Alpes-Marit., where, with the Scots Pine, it takes the place of the Mediterranean Pines, first on the northern and then higher on the southern slopes. These in their turn giving way to the Spruce and Larch. April-May.

**QUERCUS** L.

**Q. pubescens** Willd. = **Q. lanuginosa** Thuill. Hoary Oak. Sometimes considered a downy variety of **Q. Robur** L. which is found only in the mountain woods. Leaves deeply lobed, covered at first with a thick whitish tomentum be-



neath, and then pubescent; often the young shoots in spring (end of March-April) are pinkish-white or pinkish-green in colour. Fruit sessile. Cups grey tomentose, the scales with a free conspicuous point. (See Plates II and VII.)

Woods and thickets, common, except in the north of the two Departments, though in the intermediate district away from the coast it sometimes forms pure woods. April-May.

**Q. Suber L.** Cork Oak (Plate XXV). Leaves persistent, oblong ovate, entire or toothed, grey felted beneath, very variable. Cup conical at the base, grey tomentose with short spreading scales. A tree with rough bark which furnishes cork; it being cut about every seven years.

Woods and hill-sides, especially on siliceous rock, very variable, and often hybridizing. April-May. In the Var there are more extensive forests of it than in Alpes-Marit., and it is often mixed with **Q. Ilex** as in Corsica. The parts of the trunk and branches recently bared of bark are usually of a dark chocolate colour.

**Q. Ilex L.** Holm Oak. Evergreen. Leaves oval or lanceolate, entire or toothed and rather spiny, grey felted beneath. Cups with short scales. A small tree, rather darker and closer than the rest when seen at a distance and with smoother bark. Very polymorphic and often hybridizing. Cup rounder at base and acorn more elongated than in *Suber*. The late Mons. Albert described many varieties of this Oak, photographs and descriptions of which can be seen in the "Catalogue des Plantes Vasc. du Var". It particularly affects ravines, and constitutes, with Pines, the chief mass of the eastern Riviera and Corsican forests. (April-May.) It is not found on the higher mountains of the Var. (Plate II.)

**Q. coccifera L.** Prickly Oak. Evergreen. Leaves oval or oblong, small, very spiny, very polymorphic, glabrous on both sides, bronze-green when young. A small shrub, 2-6 ft. high. (See Plate XXVI.)

Woods and maquis, abundant in places on the littoral, but not east of Menton. (It reappears in the Balkans and the Orient.) April-May. Frequently affected by a scarlet gall *Plagiotrochus ilicis*, var. *coccifera* Licht., the gall being due to an insect. Descriptions and photographs of various hybrids and varieties figure in "Albert and Jahandiez," l.c. pp. 445-7.

#### OSTRYA Scop.

**O. carpinifolia Scop.** Small tree, 10-50 ft., with downy young shoots. Leaves shortly petioled, finely doubly serrate; ovate-lanceolate, with subcordate base. Flowers appearing with the leaves, the males in long fasciated sessile catkins, the females in long cone-shaped catkins like "hops". The leaves and male catkins are much like those of the Hornbeam.

Woods and hill-sides, rare in the Var, commoner near Menton, Sospel, Nice, Antibes, Grasse, etc., March-April. Mr. Tansley says in his paper on "The Forests of Provence" that there are considerable tracts of this tree on the north sides of the limestone ridges, running east and west in the right angle made by the River Var, where it turns from an easterly to a southerly course, and the strata dip steeply and regularly to the north. Mr. Bicknell says it is very common in Liguria from the coast to the mountains, and trees with trunks of considerable size grow at about 1200-1300 m. above the Rio Sgorea.

#### CARPINUS L.

**C. Betulus L.** Hornbeam. A small tree with shortly petioled leaves, ovate or oblong-acuminate, doubly toothed, with prominent parallel veins. Male catkins sessile, about  $1\frac{1}{2}$  inch long. Female catkins slender, the fruiting ones with long leafy bracts.

Woods in the mountain region, very rare. March-April. Tournon-sur-Siagne, on the N.E. limits of the Var; recorded by Hanry from la Sainte-Baume (?)

#### CORYLUS L.

**C. Avellana L.** Hazel. Woods, thickets, and ravines, occasionally on the littoral, but more commonly in the lower mountains. February-March.

## SALICACEÆ.

Leaves usually narrow. Catkins usually erect, scales entire .....SALIX.  
 Leaves broad. Catkins drooping, scales cut .....POPULUS.

## SALIX L. WILLOW.

The following are almost the only kinds of Willow found in our district : they are all found more or less near water, or on the banks of rivers and streams ; flowering in March or April : *S. cinerea* L., *S. viminalis* L. (rare), *S. incana* Schrank (fairly common), *S. purpurea* L., *S. amygdalina* L. (rarely), *S. fragilis* L. (usually cultivated), *S. alba* L., and *S. caprea* L. occasionally in mountain woods.

## POPULUS L. POPLAR.

*P. tremula* L. is rare in the Var and commoner in mountain woods of les Alpes-Marit. March. *P. alba* L. is frequent throughout the Var and here and there in les Alpes-Marit. in woods and by water. March.

*P. nigra* L. is common by water and in damp places in both Departments and it is often planted. March-April. The Lombardy Poplar (*P. pyramidalis* Rosier) is occasionally planted.

## ADDENDA.

The three following Umbellifers should have been mentioned, viz. :—

*Apium nodiflorum* Rchb. Common in ditches, streams, etc. June-July.

*Bifora testiculata* DC. Occasionally in cultivated fields. April-May.

*Ridolfia segetum* Moris. A very distinct plant, with bright yellow flowers and divaricate, filiform leaves. Fields and waste places. June-August.

Also the curious little *Vaillantia muralis* L. (Rubiaceæ), with sharply toothed and fringed fruits, which grows on rocks and dry, sandy places. April-June.

*Scutellaria galericulata* L. has been recorded from both departments, but its presence is now doubtful.

## Class II. MONOCOTYLEDONS.

### ALISMACEÆ.

Sepals green. Ripe carpels indehiscent. Ovules solitary, basal. Flowers bisexual, whorled. Carpels free ..... **ALISMA**.

Sepals and petals similar. Ripe carpels dehiscent. Ovules numerous on branching parietal placentas ..... **BUTOMUS**.

### ALISMA L.

**A. ranunculoides** L. Leaves erect, linear-lanceolate, petioled, 3-ribbed. Scape simple, bearing a single terminal umbel, or rarely a second one below it. Flowers larger than in **A. Plantago**, pinkish-white.

Ditches, marshes, and bogs, occasional. June-September.

**A. Plantago** L. Water Plantain. A much taller plant. Leaves radical, ovate to narrow-lanceolate. Flower-stem 1-3 ft. high, with unequal whorled branches, forming a loose, pyramidal panicle. Flowers small, pale pink, on long whorled pedicels.

Ditches and stagnant water, common. June-August. The var. **lanceolatum** Will. also occurs. It differs in its more lanceolate leaves, ovate sepals, and styles as long as the ovary.

### BUTOMUS L.

**B. umbellatus** L. Flowering Rush. A tall, robust, and handsome water plant with long, erect, sedge-like, triangular leaves sheathing at the base. Scape 2-4 ft. high, bearing a large umbel of pretty rose-coloured flowers with 3 thin, lanceolate bracts at the base.

Ditches and marshes in the Var, rare. June-July. It occurs in the stream by the Sud de France Railway, close to the Toulon Railway Station, also at Mourillon, La Garde, Le Pradet, and near Fréjus.

### HYDROCHARIDACEÆ.

### Hydrocharis L.

**H. Morsus-ranæ** L. Frogbit. A small, floating plant with floating horizontal stems and tufts of radical leaves, which are stalked, orbicular, entire, cordate at base, and rather thick. Peduncles bearing 2 or 3 large white flowers on long pedicels, enclosed at base in a spathe of 2 thin bracts. Outer perianth segments pale green, shorter, and much narrower than the white inner ones. Styles 6.

Ditches and other stagnant water near Fréjus, Grand Escars, and La Garde, in the Var. June-July.

### TYPHACEÆ.

Flowers in cylindric or oblong spikes ..... **TYPHA**.

Flowers in globose heads ..... **SPARGANIUM**.

### TYPHA. REED-MACE.

**T. angustifolia** L. Lesser Reed-mace or Lesser Bulrush. This is a smaller and narrower plant than the Common Reed-mace **T. latifolia** (which is less



common on the Riviera) and differs chiefly by the longer interruption between the spike of male and female flowers, and by the narrower and stiffer leaves.

Ditches and pools, fairly common. May-July.

**T. minima** Hoppe. has recently been found on the Sables du Verdon (Var).

**SPARGANIUM L.**

**S. ramosum** Huds. Branched Bur-reed. A very stout, erect, water-plant. Stems simple or branched, 2-3 ft. high, sheathed below by long linear leaves, triquetrous at base, usually much longer than the flowering spike. Male heads olive-brown, deciduous; female heads an inch across when in fruit; all disposed in a sort of leafy panicle. Bracts linear.

Ditches, streams, and other wet places. May-July.

**ARACEÆ.**

Spathe divided to the base; cornet-shaped ..... **ARUM.**  
 Spathe tubular at the base; hooded above ..... **ARISARUM.**

**ARUM L.**

**A. italicum** Mill. Leaves radical, very large, and long petioled, hastate-sagittate with divaricate acute auricles, usually spotted with pale yellow. Spathe very large, sometimes a foot long, greenish-white or yellowish, spike or spadix same colour as the spathe. Berries red.

Hedges, fields, road-sides, and damp places, common on the littoral. April-May.

**A. maculatum** L. The common "Lords and Ladies" of England is rare in the Mediterranean region and found only occasionally in mountain woods. April-May.

**A. Dracunculus** L. This handsome species, 3 ft. high or more, with very spotted stem and much-divided leaves, is naturalized in places in the Var, as e.g. at Fenouillet. May-June.

**ARISARUM Targ. Tozz.**

**A. vulgare** Targ. Tozz. = **Arum Arisarum** L. (Plate XXVIII). A small, spotted-stemmed Arum with long-petioled, radical leaves with cordate base, or often with base extended into obtuse auricles. Spathe livid brown or greenish, streaked with purple, hood-shaped above, and acuminate; spadix slender, greenish, bent forward, and prominent. Flowers monœcious. Fruit green, truncate-hemispheric, in heads an inch in diameter, each capsule having from 2-10 seeds.

Stony places, under walls, hedges, etc., very common. November-April.

**LEMNACEÆ.**

**LEMNA L. DUCK-WEED.**

**L. minor, L. trisulca, L. gibba, and L. polyrrhiza** are found in stagnant water.

**NAIADACEÆ.**

Tribe I. **JUNCAGINEÆ.** Erect marsh herbs with rush-like leaves. Flowers 1-2 sexual. Stamens 6. Carpels 3 or more; ovules basilar erect. Embryo straight. (Now usually given family rank.)

Flowers ebracteate. Anthers sessile, short..... **TRIGLOCHIN.**

Tribe II. **POTAMEÆ.** Aquatic herbs. Flowers spiked, 2-sexual. Stamens 2 or 4. Carpels 4. Ovules solitary. Embryo curved.

Perianth segments 4. Achenes sessile..... **POTAMOGETON.**

Perianth 0. Achenes stipitate ..... **RUPPIA.**

Tribe III. **ZANNICHELLIÆ.** Aquatic herbs. Flowers axillary. 1-sexual. Stamen 1, carpels 2-9. Ovules solitary. Perianth 0 ..... **ZANNICHELLIA.**

- Tribe IV. ZOSTERÆ. Marine herbs. Flowers sessile on a flattened spadix, 1-sexual. Perianth 0. Anthers sessile. Carpels solitary, sessile, ovules solitary, pendulous.
- Flowers hermaphrodite. Stamen 1 ..... ZOSTERA.  
 Flowers polygamous. Stamens 3 ..... POSIDONIA.  
 Flowers diœcious. Anthers 4-celled ..... CYMODOCEA.

#### TRIGLOCHIN L. ARROW-GRASS.

*T. barrelleri* Loisel. Root-stock bulbous, covered with fibres. Scape stiff, longer than the linear though succulent leaves. Stigmas 3. Flowers very small in a dense greenish spike. Plant 4-10 in. high. Ripe fruit separate from the axis, 6 mm. long. Carpels 3.

Damp, sandy places (in the Var), near the sea. February-May. Often in great quantities, as on the marshes below Hyères.

*T. maritimum* L. is rare and only recorded from near Toulon. May-August.

*T. palustre* L. grows in damp, grassy places in the mountain region. June-August.

#### POTAMOGETON L. POND-WEED.

The following species have been recorded from the littoral, viz. *P. densus* L., *P. pectinatus* L., *P. pusillus* L., *P. crispus* L., *P. perfoliatus* L., *P. lucens* L., *P. rufescens* Schrad., *P. coloratus* Horn., *P. fluitans* Roth., and *P. natans* L. They all grow in ponds, canals, or ditches, and several of them in running water. They flower in the south from May or June to July and August.

#### RUPPIA L.

*R. maritima* L. and *R. rostellata* K. are not uncommon near Toulon and below Hyères in the salt marshes, also more rarely at Golfe Jouan in Alpes-Marit. *R. brachypus* Ƴ. Gay has been found at Castigneaux near Toulon. These curious plants grow in brackish water and flower from June to August.

*Zannichellia palustris* L. and *Z. dentata* Willd. grow in brackish water of ditches and ponds near the coast.

*Zostera nana* Roth. and *Z. marina* L. grow in the sea and in salt-water ditches near the sea in the Toulon district and also near Antibes.

*Cymodocea æquorea* Kœnig grows in the sea at Toulon roadstead, and near Antibes, where it forms submarine fields like *Posidonia*.

#### POSIDONIA Kœnig.

*P. oceanica* Delile = *P. Caulini* Kœnig (Plate III). A submarine flowering-plant with big scaly root-stock covered with brown fibres, the remains of old leaves. Leaves green, linear strap-shaped, obtuse, entire. Flowers greenish, 2-4 in spadices, grouped in a dichotomous cyme. Perianth 0. Stamens 3. Fruit fleshy, as large as an olive, ripening in April. Flowers in October, but not every year. It grows in the sea and is very abundant in the Mediterranean. The ribbon-shaped leaves get broken and washed up by the waves, and eventually form banks 3-8 ft. high in certain places on the coast. When quite dry the leaves are used for bedding, etc.

#### DIOSCOREACEÆ.

##### TAMUS L.

*T. communis* L. Black Bryony. A pretty climber, with shining, heart-shaped entire leaves with a tapering point. Flowers small, greenish-yellow; males in slender racemes, females in much shorter and closer racemes. Berries scarlet.







PLATE XXVII.

1. *Allium roseum*.      2. *Simethis bicolor*.      3. *Lilium pomponium*.  
 4. *Scilla hyacinthoides*.      5. *Asphodelus fistulosus*.

Hedges, woods, thickets, etc. Both on the littoral and in the lower mountains. May-June.

## LILIACEÆ.

Tribe I. COLCHICEÆ. Root-stock a corm. Leaves radical. Scape short, subterranean, 1-3 fid. Perianth with very long slender tube. Flowers radical, with long tube commencing underground. Styles free. COLCHICUM.

Tribe II. TULIPEÆ. Leaves radical and cauline. Flowers few, solitary or loosely racemed. Perianth segments 6, free.

Flowers solitary, pendent, with reflexed segments. Nectaries 2-4. Anthers erect ..... ERYTHRONIUM.

Flowers few, large. Nectary 0 or obscure. Anthers versatile ..... LILIAM.

Flowers large, nodding. Nectary oblong. Anthers erect ..... FRITILLARIA.

Flowers large, solitary. Nectary 0. Anthers erect ..... TULIPA.

Flowers few, small, yellow. Nectary 0. Anthers erect ..... GAGEA.

Tribe III. SCILLEÆ. Leaves radical. Flowers 1-bracteate, racemed on a terminal naked scape.

Perianth globose, mouth constricted, 6-cleft ..... MUSCARI.

Perianth of 6 blue or white segments, star-shaped ..... SCILLA.

Perianth of 6 white, yellow, or greenish segments. Stamens as long as the perianth ..... URGINEA.

Perianth of 6 white segments. Stamens short ..... ORNITHOGALUM.

Perianth bell-shaped, of 6 blue or rose recurved or spreading segments. ..... ENDYMION.

Perianth divided to middle into 6 spreading segments ..... HYACINTHUS.

Perianth divided almost to the middle into 6 erect segments ..... BELLEVALIA.

Tribe IV. ALLIEÆ. Flowers umbelled or capitate, on a naked terminal scape.

Heads at first enclosed in a 2-leaved membranous involucre, ..... ALLIUM.

Tribe V. ASPHODELEÆ. Infloresc. mostly racemose. Flowers stellate.

Flowers large, yellow or orange. Segments united to the base. HEMEROCALLIS.

Flowers whitish, paniculate. Segments 3-5 nerved ..... ANTHERICUM.

Flowers white or pinkish, perianth segments 1-nerved (coloured). ASPHODELUS.

Flowers blue, solitary. No true leaves. Stem naked ..... APHYLLANTHES.

Tribe VI. POLYGONATEÆ. Stem herbaceous, leafy. Flowers axillary or terminal. Fruit a berry.

Flowers axillary. Perianth tubular, 6-cleft ..... POLYGONATUM.

Flowers on a lateral naked scape, racemed ..... CONVALLARIA.

Leaves net-veined, in a whorl of 4 or rarely 5. Flowers solitary ..... PARIS.

Tribe VII. ASPARAGEÆ. Stem rigid, branched or climbing. Leaves small, scale-like (except *Smilax*) with cladodes in their axils.

Leaves ovate, stiff, and prickly. Flowers on the cladodes, diœcious. Stamens 3, filaments connate ..... RUSCUS.

Leaves short, subulate clustered; flowers axillary. Stamens 6, filaments distinct ..... ASPARAGUS.

A prickly climber. Leaves cordate. Flowers small, diœcious. Stamens 6.

Berries red, in a cluster. Leaves net-veined ..... SMILAX.

## COLCHICUM L.

**C. autumnale L.** Common Colchicum or Autumn Crocus. No leaves at time of flowering. The flowers rise from the brown bulb, ending in a sheath of scales, by means of a long tube several inches above the ground. Perianth segments oblong, 6, deep mauve, lilac, or rarely white, often  $1\frac{1}{2}$  in. to 2 in. long. The leaves appear in the spring and are 8 or 10 in. long by 1 in. wide. The capsule then rises above the surface of the ground by the lengthening of the peduncle, and the leaves soon wither away.

Meadows, more or less throughout the whole region. September-October.

**C. neapolitanum** Ten. = **C. arenarium** G. G. Rather smaller. Leaves linear-lanceolate, obtuse, appearing in the spring like the last. Stigmas less curved or hooked. Stamens inserted at the same height (on 2 levels in the other). Flowers pinker than in the last.

Dry hill-sides and sandy places on the littoral. September-October.

### TULIPA L.

**T. Oculus-solis** Saint-Am. A rather slender tulip, 8-12 in. high. Leaves longer than the flower-stem, oblong, almost green. Perianth segments narrowed at base, open at the top, oblong-lanceolate, acuminate, spreading. Flowers scarlet within, paler and yellowish without, with a black blotch circled with yellow at the base of each segment. Anthers much longer than the ovary.

In fields on the littoral, uncommon. March-April.

**T. præcox** Ten. More robust than the last; leaves more glaucous, but shorter than the flower-stem. Flower erect, very large, of a uniform scarlet. Perianth segments rounded at base, closed at the top, with a broad oval black blotch at the base, circled with yellow. Anthers about as long as the ovary.

Fields on the littoral. March-April.

**T. Lortetii** Ford. Differs from the last by its scented flowers, its anthers ending in a mucro, and in having only an obscure circle of yellow at the inner base of the perianth which is invisible outside.

In fields, with the last, near Antibes, Grasse, and Cannes. March.

**T. Clusiana** Vent. in Redouté. A slender tulip with small bulb and linear or linear-lanceolate glaucous leaves. Flowers solitary, white within. Perianth segments white, the outer ones very acute and with a rose stripe; inner ones obtuse, all-lanceolate, and usually with a purple spot at the base. Anthers purple-black.

In crops and borders of fields on the littoral, rather rare, except at Menton, Bordighera, S. Remo, and eastwards. March-May.

**T. silvestris** L. Fairly robust, 1-2 ft. high. Bulb not woolly. Leaves usually 3, linear-lanceolate. Flower yellow, rather greenish outside. Perianth diocious, acuminate and pointed at the end, very unequal, the inner ones oval-lanceolate, ciliate at base, the outer lanceolate glabrous at the base. Capsule oblong-trigonus.

Meadows, fields, and woods. April-May. The type is rather rare, and less common than the var. **australis** Loret. = **T. gallica** Loisel., which is smaller, with reddish flowers outside and more equal perianth segments. April-May.

**T. Celsiana** Vent. in Redouté = **T. australis** Lk. A smaller and more slender tulip, with small glabrous bulb. Leaves usually 2, linear or linear-lanceolate, shorter than the flower-stalk and often tipped with red. Flower rather small, yellow, red outside; perianth bell-shaped, divisions lanceolate, acuminate, almost equal. Anthers yellow. Capsule subglobular.

Woods and stony hill-sides and sub-Alpine meadows. April-May. Common near S. Dalmazzo di Tenda, S. Martin Lantosque, above Grasse, etc.

### FRITILLARIA L. FRITILLARY.

**F. involucrata** All. Plant about a foot high, scarcely glaucous. Leaves linear or linear-lanceolate, in spreading pairs or almost opposite, the three uppermost in a whorl. Flowers rather large, greenish-yellow chequered with purple-brown. Perianth bell-shaped, segments elliptic-oblong.

Hill-sides and woods in the mountain district. April-May. Peculiar to the S. of France and the Maritime Alps.

**F. tenella** M. Bieb. Differs from the last by its glaucous leaves, 6-10 in number, linear and channelled, the middle ones always alternate, the upper and lower opposite or in threes. Its flowers are 1-3 in number, much smaller and almost as wide as long.

Rocky pastures in the neighbourhood of Grasse and elsewhere in the Alpes-Marit., rare. April-May.



## LILIUM L. Lily.

**L. Martagon L.** Martagon Lily. This well-known mountain Lily, 2-3 ft. high, has leaves in whorls of 6 or 8. Pendent flowers dull purple-pink spotted with darker purple, and recurved segments.

Mountain woods and thickets. June-July. In the Var it can be found in the forest of Sainte-Baume, the forêt de Brouis, bois de Morière near Solliès-Toucas, etc. In the Alpes-Marit. it descends to the mountains above Grasse.

**L. pomponium L.** (Plate XXVII). Leaves linear, narrow, very numerous and close. Flowers 1-6, rather large and handsome, pendent; segments recurved or rolled back and pointed, brilliant red spotted with dark brown. Anthers red. Very fetid.

Hot, rocky places in the lower mountains in the north of the Var; above Menton, Lantosque, St. Valier, Roja Valley, etc. In the Ligurian Alps we have seen it as high as 6000 ft.

**L. croceum Chaix in Vill. (L. bulbiferum DC.).** Tiger Lily. This handsome Lily with very large orange flowers spotted with black, and numerous lanceolate leaves, is found in mountain woods and rocky pastures in the Maritime and Ligurian Alps, descending to the hills above Menton and the neighbourhood of S. Dalmazzo di Tenda and St. Martin Lantosque. June.

**L. candidum L.** This well-known Lily with large white flowers, and lanceolate leaves (lower ones undulate and broader) is found naturalized near houses about Nice, Menton, Grasse, etc. It was formerly much cultivated for the medicinal properties of its bulb.

## ERYTHRONIUM L.

**E. dens-canis L.** Dog's-tooth Violet. This well-known little plant with 2 oblong lanceolate leaves spotted with brown, and solitary pendent violet-pink flower, with purple anthers, grows commonly in the lower Maritime Alps, e.g. those above Menton; and in 1900 was found in some woods near Garde-Freinet in the Var. March-May.

## GAGEA Salisbury.

**G. arvensis R. et S.** Bulbs 2 in a common tunic. Leaves radical, 2, narrow-linear, channelled, much spreading. Flowers yellow, green outside, 3-10 in a loose umbel; pedicels flexuous, hairy, with little bracteoles. Perianth segments long, narrow lanceolate, acute, downy.

Sandy fields. March-April.

**G. stenopetala Reichb.** and **G. bohémica R. et S.** are rare species found in one or two places in the mountains; and **G. lutea R. et S.** is rare in the South, though recorded from above Grasse.

## ORNITHOGALUM L.

**O. tenuifolium Guss.** A slender species about 4 in. high. Leaves linear, filiform, without any white line. Peduncles always erect. Flowers star-shaped, white, green outside in a loose corymb.

Dry hills and limestone mountains, descending in the Maures to near the sea. April-June. In the Sainte-Baume chain it grows on the exposed ridges and cols.

**O. umbellatum L.** Star of Bethlehem. More robust than the last. Leaves narrow linear, with a white line. Peduncles spreading at maturity. Flowers white, green outside, star-shaped, in a loose corymb.

Cultivated fields, hill-sides, and woods, especially in the hills and lower mountains. April-June.

**O. divergens Bor.** Star of Bethlehem. Closely allied to the last. Bulb furnished with bulbils within the tunic, which produce neither stems nor leaves. Leaves linear-narrow, with a white line. Flowers white, green outside, star-shaped, larger than the last, on very unequal pedicels.

Fields, hedges, and sides of paths, etc., common. March-May.

**O. arabicum** *L.* Leaves broadly linear, bracts ovate-lanceolate. Flowers very large, dirty white on both sides, in a loose corymb. A robust plant of doubtful nativity on this coast, though sometimes found in sandy or stony places in April or May.

**O. nutans** *L.* A robust plant 1-2 ft. high. Leaves broadly linear, bracts lanceolate. Flowers white within, greenish-white outside, bell-shaped in a long one-sided spike.

Fields and vineyards, rare. April-May.

**O. narbonense** *L.* Plant 1-2 ft. high. Leaves linear, shorter than the stiff stem. Flowers rather small, pure white but with a pale green stripe above (i.e. inside) very apparent beneath (i.e. outside). Flowers in a long spike. Bracts as long as the pedicels.

Hill-sides, fields, and vineyards on the littoral. May-June.

**O. pyrenaicum** *L.* Much like the last but sometimes taller (3 ft.). Leaves often dead at flowering time. Flowers greenish-white, becoming yellow on drying. Bracts shorter than pedicels. Style as long as the stamens.

Woods, fields, and stony hills. May-June. Very local.

#### URGINEA *Steinheil.*

**U. maritima** *Baker.* A tall robust plant 3 ft. or more high. Bulb very large, oval. Leaves coming before the flowers, broadly strap-shaped, entire, erect, shorter than the stem. Flowers whitish, very numerous, in a long dense spike. Pedicels twice length of flowers. Capsule large, obovate-trigonus.

Sea-sands and banks, rare. July-October. La Seyne near Toulon.

**U. undulata** *Steinh.* (with very sinuate leaves) has been recorded from the Var by Robert and Hanry, but doubted by subsequent botanists.

#### SCILLA *L.* SQUILL.

**S. autumnalis** *L.* Bulb large, oval, pale. Scape 6-12 in. high, appearing after the linear leaves have withered away. Flowers small, erect, pale violet-blue or lilac, in a spiked raceme, without bracts.

Hills, dry, stony places, and pine-woods, common. September-October.

**S. hyacinthoides** *L.* (Plate XXVII). A robust plant 2-3 ft. high, with large bulb. Leaves numerous, linear-lanceolate. Flowers violet-blue, very numerous in a long, somewhat conical spike. Peduncles spreading, purplish. Bracteoles very short, truncate, coloured. Anthers blue.

Rocky fields and hills near the coast. April-May. But it rarely blossoms. At Bordighera Mr. Bicknell saw only one blossom in five years, though many terraces were covered with it.

**S. italica** *L.* Plant about a foot high. Bulb small. Scape slender, usually longer than the linear, channelled leaves, 3-6 in number. Flowers light blue, in a short, lax conical raceme, pedicels longer than the flowers. Anthers dark blue. Bracts 2 together.

Mountain woods and shady ravines in the hills, local. April-May.

**S. bifolia** *L.* This beautiful bright blue Squill, so common in the lowland woods of Switzerland in the spring, is found in some of the mountains above Menton, etc., and flowers in May or June. Leaves 2, very rarely 3, broadly linear, concave at the top. Bracts solitary, very small, soon falling off.

#### ENDYMION *Dum.*

**E. patulus** *Dum.* This rare plant was found by the late M. Albert on grassy slopes of the Réal near Solliès-Ville in 1884. Flowers erect, violet-blue.

#### HYACINTHUS *L.*

**H. orientalis** *L.* This well-known Hyacinth with white flowers is much cultivated on the French Riviera, and is originally from the East, as its name implies. It has long been naturalized and is often found apparently wild on banks of streams, in ravines, etc. February-April.



PLATE XXVIII.

1. *Sternbergia lutea*.      2. *Crocus versicolor*.      3. *Narcissus italicus*.  
 4. *Pancratium maritimum*.      5. *Arisarum vulgare* (a. fruit).





**BELLEVALIA** *Lapeyr.*

**B. romana** *Reichb.* Plant 12-18 in. high. Bulb large, oval, brown. Leaves 4-5, very linear-lanceolate, channelled, longer than the stem. Flowers greenish-white, violet at the base, always erect, in a cone-shaped spike, becoming loose later.

Fields and damp meadows. April-May. Rare.

**B. trifollata** *Kunth.* With usually 3 leaves, is still rarer, but occasionally found in fields and vineyards near La Crau and between La Garde and Le Pradet. April-May.

**B. Webblana** *Parl.* Has been found near Bordighera, but is extremely rare. It may be a hybrid **B. romana** × **Muscari comosum**.

**MUSCARI** *Mill.* GRAPE HYACINTH.

**M. comosum** *Mill.* Leaves broadly linear, 3-4, deeply channelled. Scape naked, about a foot high. Spike finally very long and surmounted by a bunch of deep violet sterile flowers, the lower flowers being reddish-brown and arranged horizontally.

Fields and uncultivated ground, very common. April-May.

**M. botryoides** *Mill.* Leaves erect, linear-lanceolate, narrowed at base, channelled, as long as the scape. Raceme short. Flowers bright blue, small, not touching, upper ones sterile and paler in colour.

Fields and uncultivated ground. Rare at Grasse, S. Dalmazzo di Tenda, etc. April-May.

**M. racemosum** *Mill.* Grape Hyacinth. Leaves linear, very narrow, almost cylindrical, flaccid, longer than the flower-stem and often a foot long. Flowers in a dense raceme, touching one another, very dark blue, except the sterile ones above, which are brighter and with a sweet sickly scent.

Cultivated and uncultivated ground from the sea to the mountains. March-April.

**M. neglectum** *Guss.* Leaves broader, less cylindrical, channelled and spreading. Flowers dark blue, small, touching each other, in short oval heads. Perianth very open.

Fields, old walls, and vineyards, common. March-May.

**ALLIUM** *L.* GARLIC.

**A. vineale** *L.* Crow Garlic. Leaves hollow, subcylindrical. Spathe 1-valved, ovate-acute. Stamens longer than the flowers. Flowers pale rose, few, in an umbel with many bulbils below.

Fields and vineyards, common. June-July.

**A. sphærocephalum** *L.* Round-headed Garlic. Plant 1-2½ ft. high. Bulb ovoid and surmounted by several bulbils. Leaves hollow, half cylindrical. Spathe 2-valved, short, acute. Flowers bright rose, numerous, in a dense globular head.

Dry hill-sides, stony places, and waste ground. May-July.

**A. paniculatum** *L.* Leaves hollow, half cylindrical. Spathe bivalved, very long. Stamens equal to the obtuse, mucronate perianth segments. Flowers rose, or whitish, numerous, outer ones pendent, pedicels very unequal. Capsule elliptical, 2-sided.

Dry fields and vineyards. June-August.

**A. Chamæmoly** *L.* A small and very short species with ovate bulb. Leaves broadly linear and grass-like, with a few cilia at the edges. Flower-stem almost absent, the flowers appearing on the level with the sandy ground. Flowers white, few, in a dense umbel. Perianth segments lanceolate. Capsule almost spherical.

Sea-sands and rarely on dry hills, rare. January-March. In some quantity by the north side of the railway east of La Plage station (Var).

**A. acutiflorum** *Loisel.* Bulb ovate. Stem leafy below. Leaves flat and linear with the edges very finely toothed. Spathe bivalved. Umbel many flowered, crowded into a spherical head. Perianth segments acute, pale magenta colour, with darker striae in the centre. Stamens shorter than perianth, the inner ones tricuspidate. Capsule ovate-triangular.

Rocky or sandy hill-sides and rarely on sea-sands. May-June.

**A. subhirsutum** *L.* Leaves broadly linear, acuminate, channelled above and keeled below, borders ciliate and with a few hairs beneath. Spathe 1-valved. Flowers 6-12, in a flat umbel. Perianth segments oblong, acute, white, with a pink stripe in the centre. Stamens shorter than the perianth.

Stony, sandy places and cultivated ground, rare. March-May.

**A. neapolitanum** *Cyr.* Bulb nearly globose. Flower-stems triangular, with 2 acute and 1 obtuse angle. Leaves broadly linear and acuminate, channelled above. Perianth segments oval, obtuse, white, large. Flowers very numerous, on long peduncles.

Fields and stony slopes, here and there naturalized; and much cultivated for the sake of its ornamental flowers which will keep fresh in water several weeks. February-May.

**A. triquetrum** *L.* Bulbs oblong. Flower-stem triquetrous, with very acute angles. Leaves broadly linear, deeply channelled and keeled. Spathe bivalved. Peduncles mostly pendent, the flowers hanging to one side often. Perianth segments white, with a green stripe down the centre. Stamens shorter than the perianth. Capsule nearly globular.

Banks of streams, shallow ravines, and shady places, usually not far from the sea. February-May.

In Algeria this plant is being cultivated as a vegetable (see "Gardener's Chronicle," November, 1913).

**A. roseum** *L.* (Plate XXVII). Plant 1-2½ ft. high, strongly smelling of garlic. Leaves linear, barely channelled, rather broad, very slightly toothed. Stem cylindrical, leafy at the base. Flowers a beautiful pale rose, rather large and numerous in a regular umbel, and occasionally with bulbils. Perianth segments oblong elliptic. Spathe of 3-5 short lobes. Stamens and capsule included.

Fields, hedges, and road-sides, common throughout the littoral. May-July.

**A. pulchellum** *Don.* Leaves linear, slightly channelled, striped beneath. Flower-stem cylindrical, leafy below. Spathe bivalved and long. Flowers violet-rose in colour, outer ones pendent, but all erect after flowering. Perianth segments oblong, almost truncate. Stamens much longer than the perianth. Capsule top-shaped emarginate.

Dry banks and rocks near Eze, Ste. Agnes, above Menton, Castillon, and in the Roja valley near Ventimiglia, etc. August-October.

The following are the most important species not yet mentioned which occur on the Riviera:—

**A. ursinum** *L.* (Common Garlic) in the mountain region towards the Col de Tenda etc.; **A. nigrum** *L.* (flowers dirty red), here and there in the olives and the wheat; **A. oleraceum** *L.* (flowers few, dirty pink); **A. moschatum** *L.* (very slender with filiform leaves and pink flowers); **A. rotundum** *L.* (flowers purplish, in dense globular heads with purple-black rough ridges), in vineyards and stony fields; **A. polyanthum** *R. et S.* (a tall species with rose-coloured flowers); **A. siculum** *Ucria*, 3 ft. high, with large purplish-green pendent flowers, found in the Esterel; the large **A. Ampeloprasum** *L.* et **A. fragrans** *Vent.* of North American origin.

#### HEMEROCALLIS *L.*

**H. fulva** *L.* Plant 2-3 ft. high, with robust stem. Leaves radical, long, acute. Flowers very large, reddish-fawn colour, shortly pedicelled, 6-15 in a loose panicle.

Borders of fields and ditches, often spontaneous. June-July. Pourrières, Le Luc, and Ampus in the Var.



## ANTHERICUM L.

**A. planifolium** L. = *Simethis bicolor* Kunth. (Plate XXVII). A much-branched elegant plant with a bract under each branch. Leaves linear, longer than the stem. Flowers white within, lilac or pale violet outside, star-shaped, in an irregular loose panicle. Perianth segments elliptical, with 5 veins. Capsule globular with 3 shining seeds.

Woods and thickets and stony places, local but sometimes abundant, as e.g. near Carqueiranne. April-May.

**A. ramosum** L. Stem 1-2 ft. high, ending in a branched panicle. Peduncles jointed very near the base. Flowers distant, pure white, star-shaped. Style longer than the perianth. Leaves linear, channelled, shorter than the stem. Fruit globular, 3-celled.

Sunny hills and woods in the lower mountains, but not in the Var. May-July.

**A. Lillago** L. Stem usually shorter but less delicate than in *A. ramosum* and not branched. Flowers larger, white (1 in. across). Raceme simple. Peduncles jointed below the middle. Style rather shorter than the perianth.

Woods and hills, from the hills to the mountains. May-June.

## ASPHODELUS L.

**A. fistulosus** L. (Plate XXVII). Root of fleshy fibres. Stem erect, branching, 1-2 ft. high. Leaves linear, nearly cylindrical at the top and somewhat fistulous. Perianth segments elliptical, pale flesh colour or nearly white, with a pinkish-brown line in the centre. Capsule globose, shorter than the pedicels.

Dry, sandy places on the littoral. April-May.

**A. microcarpus** Vir. Small-fruited Asphodel. Root of fleshy tubercles. Stem robust, 3-5 ft. high, much branched above. Leaves broadly linear, deeply gouged, stiff. Flowers white, flesh-coloured, or pale rose in dense panicles. Bracts very pale, fawn colour. Perianth segments 14-16 mm. long, with a green nerve. Capsule small, obovate about 6 mm. long and about as long as the pedicels.

Sandy ground near the sea. Frequent. March-May. Very common on la Plage d'Hyères and at Giens.

**A. Chambeironi** Ford. Intermediate between the last and the next; smaller in stature but with larger pale pink flowers than the last. Found on the Ile de Port Cros, near Toulon and Hyères. Very rare. May-June.

**A. cerasifer** F. Gay = *A. ramosus* Gouan. Root a bundle of large tubers. Stem simple or more often branched, 3 ft. high. Flowers white or flesh coloured with pink vein. Perianth 20-24 mm. long. Capsule as large as a big cherry, yellowish, subglobular, with thick yellowish obtuse valves, and with 7-9 transverse furrows.

Dry places and hill-sides up to 1100 m. in the Var and 1200 m. in Alpes-Marit. May-June. Not found on the coast itself.

**A. albus** Willd. Root with oblong tubers. Leaves broadly linear, channelled and keeled. Stem simple or slightly branched, 3-4 ft. high. Perianth segments light flesh coloured, with greenish-red stripe. Capsule ovate-elliptical, truncate and emarginate at apex, with 8-9 transverse furrows on the valves not turning yellow. It differs from the last in the form and colour of its ripe fruit, and in its filaments densely ciliate to the middle.

Mountain slopes and pastures in Alpes-Marit. and Liguria. May-June.

## APHYLLANTHES L.

**A. monspeliensis** L. A curious and pretty blue flowered plant, 8-18 in. high, tufted, and with hard root-stock and fibrous roots. Stem naked, slender, rush-like. Leaves reduced to scaly sheaths at the base of the stem. Flowers star-shaped, terminal, blue, rarely white. Stamens unequal, inserted at base

of perianth segments; filaments glabrous. Stigma trifid. Capsules within a scaly involucre, trigonous.

Dry, hilly places, especially on limestone, fairly common on the littoral hills and descending to within 150 ft. above the sea at Carqueiranne. April-May.

#### POLYGONATUM *All.* SOLOMON-SEAL.

**C. officinale** *All.* Plant 1-1½ ft. high, with horizontal fleshy rhizomes. Stem simple, angular, leafy above. Leaves alternate, oval or oblong. Flowers greenish-white, pendent, larger and thicker than in **P. multiflorum**, 1-2 in each axil. Filaments glabrous. Berry as large as a pea, blue-black.

Damp, shady woods. April-June. Common in the forest of Sainte-Baume and elsewhere in the lower mountains, e.g. above Grasse and Menton.

**P. multiflorum** *All.* (flowers 2-7) and **P. verticillatum** *All.* (leaves narrow, in whorls) grow in the higher Maritime Alps outside of our district.

#### CONVALLARIA *L.*

**Convallaria majalis** *L.* (Lily of the Valley) is recorded from the forêt de Molières and val Pesio in the Maritime Alps. May-June.

#### PARIS *L.*

**Paris quadrifolia** *L.* (Herb Paris) grows in mountain woods in Alpes-Marit. and in Liguria. We have also seen it in the forest of Sainte-Baume at about 800 metres. Leaves usually 4 in a whorl. Flower solitary. Berry black.

#### RUSCUS *L.* BUTCHER'S BROOM.

**R. aculeatus** *L.* Common Butcher's Broom. A stiff dark green, much-branched plant 2-4 ft. high, with shrubby stems. Leaves (cladodes) ovate, small, numerous, terminating in a prickly point; the leaves, however, vary in size and shape. Flowers small, greenish-white, almost sessile in the middle of the leaves, but actually borne on a pedicel arising from the axil of the leaf and closely adnate to the surface. Berries red, sometimes as large as small cherries.

Common in woods and hill-sides. February-May. Fruit in winter.

**R. hypoglossum** *L.* Leaves (cladodes) much larger, oblong-acuminate, not prickly, sessile; the lower ones opposite or in threes, the others alternate. Flowers greenish-white, shortly pedicelled, 2-5 in a little cluster above the middle of the leaf.

Shady rocky places, very rare. February-March. Recorded from several places near Hyères, La Seyne, and Bormes, as well as from near Nice; in the opinion of the late M. Albert not truly native but well naturalized as an escape from cultivation.

Mr. Bicknell has found it on grassy and rocky banks in the Arma valley near Ceriana ("Flora of Bordighera and San Remo").

#### ASPARAGUS *L.*

**A. scaber** *Brignoli*. Closely allied to **A. officinalis**; stems 2-3 ft. high, much branched; branches somewhat scabrous. Cladodes thick, in whorls of 5-8. Flowers greenish-yellow, in pairs or singly. Anthers mucronate, half length of the filaments. Berry red, as large as a big pea.

Sea-sands. May-June. Below Hyères and at Villepey near Saint Aygulf.

The Common Asparagus (**C. officinalis**) is often found as an escape from gardens.

**C. acutifolius** *L.* A ligneous and almost climbing plant 2-4 ft. high. Stems and branches wiry and flexuose, downy, rough. Cladodes short (3-6 mm.) spreading, prickly, in star-shaped clusters of 5-12. Anthers oblong, much shorter than the filaments. Berry black, as large as a small pea. The young shoots are cut in early spring and eaten at table.

Sandy places, hills, and woods; very common throughout the littoral. July-September.

## SMILAX L.

**S. aspera** L. (Plate XXIV). A prickly climbing under-shrub, 3-4 ft. long, glabrous, much branched, with angular slender wiry stems. Leaves alternate, ovate-cordate or hastate, rather leathery, shining, persistent, and with a few recurved hooks at the edge. Flowers small greenish-yellow, dioecious, in sessile axillary and terminal clusters. Berries red, small, globular.

Woods, hedges, borders of fields and in the maquis. Very common and characteristic throughout the littoral. September-October. Fruit in winter.

**S. mauritanica** Desf. is the variety with broad, cordate, and unarmed leaves, which is found in many places near the coast. In the type the recurved hooks on the stem and leaves act as grappling-irons to this climber. In addition there is usually a pair of tendrils at the base of each leaf.

## JUNCACEÆ.

Plants glabrous. Ovules many, parietal or axile.....JUNCUS.

Plants more or less pilose. Leaves flat. Ovules 3, basal.....LUZULA.

## JUNCUS L. RUSH.

\* *Leaves all reduced to sheaths, or a few stem-like. Cymes lateral, many flowered. Root-stock perennial.*

**J. effusus** L. = **J. communis** Meyer. Common Rush. Stems soft, 1-3 ft. high, pith continuous. Perianth segments lanceolate, olive-green, longer than the obovoid retuse capsule. Stamens 3, anthers oblong. Cymes usually lax, effuse.

Ditches and watery places. June-August.

**J. conglomeratus** L. Dense-flowered Rush. This is really only a variety of the last, with dense subglobose cymes, perianth tinged with brown, longer linear anthers and mucronate capsule.

Damp places, woods, etc. June-July.

**J. glaucus** Ehrh. Hard Rush. Stems rigid, not so tall as the last, deeply grooved and striate, glaucous. Pith interrupted. Perianth segments brown, narrow-lanceolate, about as long as the ovoid mucronate capsule. Stamens 6. Cymes suberect.

Damp places. May-July.

**J. diffusus** Hoppe, is a hybrid between **glaucus** and **effusus**. The stems are softer, less striate and glaucous, pith continuous, cyme elongate, and capsule more obovoid.

Damp places with the parents. July-August. Near La Martre (Var).

**J. acutus** L. Sharp Rush. Stems rigid, stout, 3-4 ft. high, terete, many flowerless; in large circular tufts. Sheaths long, shining. Perianth segments ovate-lanceolate, brown, inner ones obtuse, winged towards tip with a broad scarios margin, half as long as the ovoid turgid mucronate capsule. Cymes corymbose, dense flowered, very large in fruit. Bracts lanceolate-subulate.

Salt marshes and sea-sands. May-July. Common throughout the littoral.

**J. maritimus** Lam. Great Sea Rush. Stems wiry, but less rigid and often more slender than the last. Sheaths short, pale. Tufts large and irregular. Perianth segments lanceolate, acute and with scarios margins, as long as the elliptic-oblong acuminate capsule. Cymes more interrupted, branches long and erect. Bracts not longer than the pale flowers.

Same places and as common as the last. June-September.

\*\* *Leaves all terete, compressed or channelled. Cymes terminal or lateral, 1-3 (rarely 6) flowered. Testa produced at each end.*

**J. triglumis** L. and **J. trifidus** L. which come in this group are found only in the Maritime Alps at considerable elevations.



\*\*\* *Leaves chiefly radical, flat or grooved; Cymes terminal, 3-many-flowered. Testa not produced at either end.*

**J. compressus** Jacq. Round-fruited Rush. Stems tufted, slender, 1-2 leaved. Leaves linear, flaccid, as long as the stem or shorter. Perianth segments oblong obtuse, shorter than the broad obovoid shortly mucronate capsule. Cymes irregularly corymbose, bracts small. Perianth segments pale, with broad scarious brown margin.

Damp, grassy places, uncommon; extending into the mountains. June-August.

**J. multiflorus** Desf. = **J. subulatus** Forsk. Rhizomes creeping. Stems 2-3 ft. high, leafy, robust. Leaves 1-4 on the stem, erect, subcylindrical, hollow, soft. Perianth segments lanceolate-acuminate, greenish. Stamens 6. Capsule small, ovoid-trigonal, obtuse, mucronate, brown, rather shorter than the perianth. Cyme long, narrow, interrupted, with erect branches and short bracts.

Damp places and marshes on the littoral. May-July. This seems to be a typical Mediterranean species; found at Castigneaux, near La Seyne, La Garde, and the Plage d'Hyères.

**J. Gerardi** Loisel. Closely allied to **J. compressus**, but with more remote stems and narrower strongly mucronate capsule not longer than the perianth. Salt marshes, etc. May-July.

\*\*\*\* *Root-stock perennial, usually creeping. Stem solid. Leaves hollow and septate within. Testa not produced.*

**J. obtusiflorus** Ehrh. Obtuse Rush. Stems not tufted, 2-3 ft. tall, rather stout but soft and sheathed at the base. Root-stock widely creeping. Leaves 1-2, erect, terete like the stem. Cymes lateral or subterminal in very compound corymbs, with zigzag branches. Perianth segments obtuse, as long as the ovoid mucronate capsule.

Marshy places. May-July.

**J. articulatus** L. = **J. acutiflorus** Ehrh. Jointed Rush. Very variable in size and habit. Stems tall and slender; leaves plainly jointed when dry. Flowers in dense distant sessile or peduncled clusters of 3-12, dark chestnut colour. Perianth segments as long as the narrow acuminate capsule. Stamens 6.

Damp places in the hills, rare in the Var. May-July.

There are two sub-species much commoner than the type in the south, viz. :—

**J. lamprocarpus** Ehrh. Stem slightly compressed and leaves plainly septate when dry, cyme terminal, perianth-segments shorter than the narrow beaked glossy capsule, inner segments obtuse. Stamens 6.

Damp places, common. May-July.

**J. supinus** Manch. = **J. uliginosus** Roth. Root-stock sometimes tuberous, stems terete, 3-12 in., often floating with flaccid, straggling branches; joints obscure; leaves slender; cymes terminal, branches few, long and suberect; bracts scarious, acute, perianth segments acute, as long as the ovoid obtuse mucronate capsule. Stamens 3.

In water and damp places near. June-July.

**J. striatus** Schousboë. Rhizomes thick and long. Stems 1½-2½ ft., strongly striate and with roughnesses. Leaves thick, knotted, striate. Flowers yellow-brown in clusters of 6-20, forming a spreading panicle. Bracts long acuminate, as well as the perianth segments. Stamens 6. Capsule reddish-brown, with beak slightly exceeding the perianth.

Damp places, uncommon. May-July. The Maures, Solliès-Toucas, Ampus, by the river, and by the R. Var.

**J. lagenarius** Gay. A more slender and less-branched species, with long slender above-ground stolons. Leaves (often reduced to mere sheaths) cylindrical, slender, short and knotted. Flowers brown or greenish in clusters of 6-12. Perianth segments acuminate, distinctly shorter than the reddish capsule with long beak.

Damp places. May-July. A Mediterranean species found near Toulon, Les Sablettes, Saint Cyr, Porquerolles, and by the river at Ampus.

\*\*\*\*\* Annual. Stem hollow. Testa not produced.

**J. capitatus** Weigel. Capitate Rush. Very small and tufted, 1-4 in. high, usually reddish when dry. Stems setaceous, grooved. Leaves all radical, short, setaceous; sheaths short. Heads terminal, bracteate, solitary. Perianth segments elliptic-ovate, acuminate, awned, longer than the ovoid mucronate capsule. Stamens 3.

Sandy places flooded in winter; sometimes common. May-July.

**J. pygmæus** Rich. Very small, 1-5 in. high, tufted, dark pink when dry. Stems slender, terete, simple or once branched. Leaves radical, setaceous, faintly jointed and channelled. Flowers 1-5, subsessile, bracteate. Perianth segments linear-lanceolate, acuminate, not awned, longer than the narrow acute capsule.

Damp, sandy places in the Var. May-July. Fréjus, Le Luc, Les Maures, Toulon, La Seyne, and on the sandy marsh below Hyères.

**J. bufonius** L. Toad Rush. An extremely variable plant, 1-12 in. high, with several named varieties. Usually densely aggregated, from the seedlings growing in masses. Colour pale, though sometimes reddish. Stems slender, septate, upper part of cyme dichotomously branched. Perianth segments lanceolate, much longer than the pale, acute, mucronate capsule. Cyme occupying most of the stem. Bracts small, obtuse, scarious.

Damp, sandy places, very common. May-July.

In 1908 the present writer published in "Bull. Herb. Boiss.," 2<sup>me</sup> série, Tome VIII, a "Note sur les *Juncus bicephalus*, Viv. et *J. bufonius* var. *fasciculatus* Koch". It was here stated that the true *J. bicephalus* Viv. is a variety of *J. pygmæus* according to Buchenau's monograph, and proved that the plant described and figured in Coste's "Flore de la France" from Hyères (Var), Corsica, and Balearic Isles, is not the true *bicephalus* of Viviani but *J. pygmæus* var. *fasciculatus* Koch (1837) = var. *congestus* Wahl. (1825), and that it has several other synonyms. It is a marked variety 3-6 in. high, erect and with flowers in more or less dense clusters. But to add to the confusion the late M. Albert in the "Cat. des Plantes du Var" (1908) placed the Hyères plant under *J. bicephalus* G. G. (*non Viv.*) and said it differed from the var. *fasciculatus* G. G. in its erect stem with only 2-4 clusters of flowers. It grows at the Vieux Salins and on the Plage de Giens, south of Hyères.

**J. bufonius** var. *minutulus* Alb. et Jahandiez. Plant very small, 1-2 cms., cæspitose; stems shorter than the leaves, bearing at their summit one or rarely two flowers. This is a form of dry places (March-April) and has been found at Bormes and in sandy fields at Bon-Renaud, Porquerolles by M. Jahandiez.

**J. Tenagela** L. Plant annual, 3-12 in. high. Stems slender. Leaves narrow-linear, with auricled sheath. Flowers brown, solitary, distant, in a very loose cyme. Bracts very short. Outer perianth segments ovate acute, as long as the very obtuse subglobular capsule. Stamens 6.

Sandy places and damp fields, uncommon. May-August. Fréjus, Le Luc, Les Maures, Collobrières, Porquerolles, near Antibes, etc.

#### LUZULA L. WOOD-RUSH.

**L. Forsteri** DC. Hairy Wood-rush. Closely allied to *L. pilosa* Willd. which does not grow in the Mediterranean region, but more slender, with an acuminate capsule, and seeds with a shorter straight obtuse crest. Leaves linear, sometimes  $\frac{1}{2}$  in. broad, soft, slightly hairy. Cymes lax, with few branches reflexed in fruit, and sub-solitary flowers. Perianth-segments acuminate.

Shady woods extending to the mountains. March-May.

**L. silvatica** Gaud. = *L. maxima* DC. Great Wood-rush. A taller robust species, 1-2 ft. high. Leaves often half-inch broad with scanty silky hairs, channelled. Cymes large, compound, with branches 3-4 in., spreading in fruit.

Flowers clustered. Perianth segments awned, rather shorter than the ovoid acute beaked capsule. Bracteoles ovate, acute, scarious.

Shady mountain woods. May-July. Sainte-Baume, Margés, and in several of the lower mountains north of the Var, and in Liguria.

**L. campestris DC.** Common Field-rush, is frequent on heaths and grassy places, chiefly in the hills and lower mountains. March-June.

**L. nivea DC.** (flowers silvery-white then becoming dirty, on long stems), grows in damp mountain woods in the north of the Var and descends in Alpes-Marit. to Mont Mulacé above Menton. June-July.

**L. pedemontana Boiss. et Reut.** (leaves narrower than in *nivea*, plant shorter and more slender, flowers silvery-white in smaller clusters of 3-6), grows in the Maritime Alps and can be seen near St. Martin Vésubie. June-August.

It descends to the lower limit of the chestnuts at about 300 m.

#### IRIDACEÆ.

Segments of perianth nearly equal.

Perianth-tube long. Scape 0 ..... CROCUS.

Perianth-tube short. Stigmas 3, 2 partite. Scape short ..... ROMULEA.

Segments of perianth unequal.

Perianth regular ..... IRIS.

Perianth irregular, often curved ..... GLADIOLUS.

#### CROCUS L.

**C. versicolor K.** (Plate XXVIII). Leaves appearing with the flowers, narrow-linear, spreading. Flowers large and handsome, pale violet or nearly white, with 3 darker veins on each segment, throat glabrous, white or pale yellow.

Hill-sides and thickets on the littoral and in the lower mountains. February-March. Can be seen at Montrieux and elsewhere above Toulon, about Solliès-Toucas, and S.-Ville, La Farlède, Cap Martin, and in the Esterel. In the mountains it grows mostly between 800 and 1200 m.

#### ROMULEA L.

**R. Bulbocodium Seb. et Maur.** Plant with an oval corm, 10-20 cm. long. Stem slender, with 1-4 flowers. Leaves linear, compressed and furrowed. Perianth violet, with deep yellow downy throat, and lanceolate divisions. Style longer than the stamens, whose filaments have short hairs at the base. Capsule oblong, with reddish seeds.

Sandy, grassy places near La Garde and La Seyne. And again nearer Genoa. February-April.

**R. ramiflora Ten.** A little taller than the last. Leaves 15-30 cms. long, linear, much longer than the stem. Perianth rather small, lilac within, washed with yellow outside, throat rather hairy. Stamens at least as long as the style. Capsule oblong, seeds reddish.

Sandy, grassy places on the littoral. February-April.

**R. Columnæ Seb. et Maur.** The smallest species (5-12 cms.). Leaves linear, compressed, 5-12 cms. long and longer than the stem. Perianth very small, short peduncled, pale lilac or whitish with darker veins and glabrous throat. Stamens as long as the style. Capsule ovoid, seeds brown.

Grassy, sandy places on the littoral. February-March.

#### IRIS L.

**I. tuberosa L. = Hermodactylus tuberosus Salisb.** Leaves 3-4, linear-tetragonous, long, sharp angled and sheathing. Flower solitary, green, the reflexed part of the outer segments dark purple and velvety. Capsule obovate.



Stony and damp grassy places, rare. February-April. Near Valescure, Bormes, and Ollioules (Var), in the Magnam valley and near Grasse and Bordighera.

**I. spuria** L. (1-3 pale violet flowers), grows in damp meadows near the sea close to Hyères and the presqu'île de Giens. May-June.

**I. Pseudacorus** L. (Common Yellow Flag), is abundant in some of the ditches and ponds of the lowlands. It seems to grow larger and of a brighter yellow than in England. April-June.

**I. foetidissima** L. Stinking Iris. Flowers 2-3, livid blue or rarely whitish, 3 in. diameter. Inner segments and stigmas spatulate, yellow, outer segments obovate-lanceolate, bluish. Capsule 2-3 in. clavate. Seeds orange-red. Leaves fetid when bruised.

Hedges, dry ditches, and borders of woods, occasional. May-June.

**I. Chamæiris** Bert. = **I. italica** Parl. Rhizome thin. Stem bearing 1 and rarely 2 flowers. Perianth-tube twice length of the ovary. Outer perianth segments obtuse, purple, inner ones obtuse, but often divided. Anthers blue, filaments white.

Dry hills and rocky places, fairly common. March-May.

It differs from **I. germanica** L., the purple Iris so commonly seen in English gardens, which occurs on the borders of fields, in walls, etc., on the Riviera, by its smaller size, narrower leaves, and fewer flowers which are smaller and redder. From **I. olbiensis** it differs by its greater delicacy, its shorter, narrower, and more glaucous leaves and lighter coloured flowers. According to Mr. Baker, however, **I. italica** is a variety of **I. Chamæiris**.

**I. lutescens** Lam. Closely allied to **I. Chamæiris**. Flowers yellow capsule ovoid, trigonous, with acute angles. Rhizome as thick as the finger.

Dry places and rocks on the littoral, rare. March-May.

**I. olbiensis** Héron. Perhaps only a variety of the last, with violet flowers. Perianth-tube rather longer than the ovary.

Shady woods and sea-sands, rare. March-May. Found near Hyères, Le Luc, Toulon, Roquebrune, Forêt de Dom, and also recorded by Ardoino from Eze.

**I. florentina** L. is a handsome Iris with large white flowers, 2-3 on a stem which is sometimes seen among **Arundo Donax** and elsewhere on the coast as an escape from cultivation. It flowers about April.

#### GLADIOLUS L.

**G. segetum** Gawler. (Plate XXIV). Plant 1½-2½ ft. high. Bulb globular, covered with a fibrous tunic. Stem robust, bearing 3-5 leaves and 6-10 large magenta coloured flowers. Anthers a little longer than the filaments. Capsule globular, with rounded angles. Seeds pear-shaped.

Fields and crops, common. April-June.

**G. communis** L. Spike more unilateral. Anthers shorter than their filaments. Stigmas glabrous at the base. Capsule obovate, with obtusely keeled angles. Seeds broadly winged.

Fields and waste places. Much less common than the last. May-June.

**G. dubius** Guss. A smaller species, with the fibrous corm not reticulated at the top, as in the others. Spike unilateral. Anthers shorter than their filaments and with acute diverging auricles. Capsule more rounded than the last, and the seeds narrowly winged.

Woods and sandy places on the littoral, uncommon. April-June.

**G. imbricatus** L. is a rare species found by Shuttleworth and since by Jahandiez on the Isle of Porquerolles. May-June.

## AMARYLLIDACEÆ.

Tribe I. AMARYLLEÆ. Mouth of perianth without a circular crown.  
 Crown o. Perianth segments equal. Stigmas entire.....LEUCOIMUM.  
 Crown o. Outer perianth segments larger. Stigma trifid.....STERNBERGIA.

Tribe II. NARCISSEÆ. Mouth of perianth with a circular crown.  
 Stamens inserted on the perianth; half included .....NARCISSUS.  
 Stamens inserted on the crown; very conspicuous.....PANCRATIUM.

Tribe III. ALSTROMEREÆ. Plants with leafy scape and large spiny leaves.  
 Usually robust, and always without bulbs .....AGAVE.

## LEUCOIMUM L. SNOWFLAKE.

**L. pulchellum** *Salisb.* Closely allied to **L. æstivum** L. Bulb large. Stem 1-2 ft. high, bearing 1-4 rather small white flowers, with narrow divisions blotched with green at the top. Capsule oblong pear-shaped. Seeds black.

Meadows and borders of streams, rare. Near Nice, below Hyères by the River Rubaud, Porquerolles, and by the R. Las near Toulon. January-March.

**L. nicæense** *Arđ.* Leaves 3-5, narrow-linear, almost cylindrical. Segments of perianth ovate-elliptic, the inner rather shorter and more obtuse, the outer more pointed with thickened tip. Disk 6-lobed. Filaments bent angularly. Style longer than the stamens. Stigma obtuse, pappilose.

Among rocks near the coast between Menton and Nice and more especially about Beaulieu, Eze and Pont St. Louis. Endemic. March-April.

STERNBERGIA *Waldst. et Kit.*

**S. lutea** *Ker.* (Plate XXVIII). Bulb oval, large. Leaves appearing with the flowers, broadly linear, concave, green. Perianth yellow, large, erect, solitary. Capsule pear-shaped, fleshy.

Fields and uncultivated ground on the littoral, local. September-October.

## PANCRATIUM L.

**P. maritimum** L. Sea Lily (Plate XXVIII). A handsome plant, 1-2 ft. high. Leaves broadly linear, obtuse, glaucous. Scape 2-edged. Flowers 3-12 in an umbel, white, sweet scented. Perianth segments narrow-lanceolate, acute, with a greenish stripe outside. The crown has 12 triangular teeth. Stamens with pale yellow anthers, and filaments joined to the crown opposite the perianth segments and then free. Stigma white, 3-lobed, pappilose. Capsule large, oblong, with 3 obtuse angles. Seeds black, unequal, often cubical.

Sands of the sea-shore. July-September or occasionally October. The beautiful flowers are visited by the Convolvulus Hawk-moth (**Sphinx convolvuli** L.). It is abundant on the sands below Hyères and the Plage de Giens, at the Grand Langoustier in the Isle of Porquerolles, Ile du Levant, etc., and it occurs near Fréjus, St. Tropez, St. Aygulf, Cannes, Ile St. Marguerite, Bordighera, etc.

## NARCISSUS L.

(1) *Stamens with free filaments, at least in their upper third.*

**N. Pseudonarcissus** L. Daffodil. Meadows and borders of streams, native in the north of the Var, elsewhere usually escaped from cultivation. In the Alpes-Marit. it grows in the lower mountains above Grasse, Vence, Menton, etc.

**N. incomparabilis** *Mill.* Leaves flat, obtuse. Scape with 1 large flower. Perianth-tube narrow, bright yellow crown and pale yellow, obovate mucronate, spreading perianth segments. Often with double flowers, rarely single.

Fields and sides of ditches near Toulon, Le Luc, Grasse, and Menton. March-April.

**N. odorus** L. Leaves narrow, much channelled. Scape 1-3 flowered. Flowers entirely yellow, large (4-6 cm.), often scented. Perianth saucer-shaped, with obovate mucronate spreading segments. Crown large, 10-14 mm. high, shortly lobed. Style much longer than the stamens.

Fields and meadows, rare; but often adventitious. March-April. Le Luc, Solliès-Toucas, north of Mont Faron, Menton, Grasse, etc.

**N. major** Curt. = **N. hispanicus** Gouan. Woods and meadows, often cultivated and sometimes double. April-May.

(2) *Stamens with filaments united into a tube for nearly their whole length.*  
\* Scape 1-2 flowered.

**N. poeticus** L. Poet's Narcissus. Perianth with small crown deeply crenate, greenish-yellow with bright red rim.

Meadows and damp woods of the lower mountains. April-May.

**N. biflorus** Curt. Two-flowered Narcissus. Leaves almost flat. Flowers usually two together, pale straw-colour or rarely nearly white, sweet-scented. Perianth-tube slender, an inch long; segments oval or oblong; crown very short, broadly cup-shaped, yellow, with slightly crenate edge.

Damp places near Menton and Grasse, rare. April.

\*\* Scape 3-12 flowered.

**N. italicus** Gawl. (Plate XXVIII). Leaves broadly linear, obtuse, channelled, not glaucous, about the length of the scape. Flowers 6 or more. Perianth segments oblong-lanceolate, yellowish-white (yellower than *N. tazetta*), crown pale yellow, with slightly crenate margin. Style longer than the upper stamens.

Meadows, sides of fields, and hills near the coast. January-March, rare. Le Luc, near Toulon and Hyères, Nice, Grasse, Menton, S. Remo.

**N. papyraceus** Gawl. = **N. niveus** Loisel. Stem 1-1½ ft. high. Leaves broadly linear, obtuse, channelled and glaucous. Flowers 10 or more in an umbel, sweet-scented. Perianth and crown pure white; tube green at base, white above; segments 4 times length of crown. Style reaching the upper stamens.

Borders of fields, hill-sides near the coast. December-March. Much cultivated and rarely seen now in a truly wild state.

**N. tazetta** L. Stem 1-2 ft. high. Leaves broadly linear, obtuse, flat or somewhat channelled and slightly glaucous, sometimes longer than the stem. Flowers 2-12 in a drooping umbel, sweet-scented. Perianth segments nearly white, i.e. cream coloured, mucronate, shorter than the long and narrow tube. Crown yellow, a third to a half length of the perianth segments, entire or slightly crenate.

Damp meadows and borders of streams. Common on the littoral, and sometimes in abundance as in the marshes below Hyères. February-April.

**N. patulus** Loisel. Though given as a distinct species in the "Catalogue des Plantes Vasculaires du Var" this may be considered, as Ardoino suggests, as a form of *N. tazetta* with narrower leaves and smaller flowers, which grows in dry, stony places under the olives, etc. February-April. Les Iles d'Hyères, presqu'île de Giens, and in les Alpes-Marit.

**N. dubius** Gouan. This must be very similar to the last, though the flowers are entirely white. Stem 6-12 in. high. Leaves glaucous, linear (3-5 mm.). Flowers small (up to 2 cm. in diameter), 2-6 in an umbel. Perianth segments much shorter than the long narrow tube. Crown white, 3-5 mm. high, crenate at the edge.

Stony places and in fissures of rocks in the hills of the littoral. March-April. Faron (near the top), Ollioules, La Valette, and La Farliède towards Coudon.

**N. aureus** Loisel. Leaves 4-6, green, flat, broad and erect. Flowers golden-yellow, 3 cm. in diameter, often scented, 8-12 in an erect umbel. Perianth segments oval-obtuse, mucronate. Crown bright yellow, 4-6 mm. high and almost entire, equal to a third of the segments.

Borders of fields, etc., rare. January-March. Le Luc, Menton, Nice, Grasse



**N. intermedius** *Lois.* Leaves channelled, half-cylindrical. Perianth segments lemon-yellow, spreading, ovate-apiculate. Flowers 3-6 in a drooping umbel. Crown with orange crenate border.

Borders of fields, rare. Menton and Grasse.

**N. Jonquilla** *L.* Jonquil. Plant 1-1½ ft. high. Leaves green, channelled, linear subcylindrical. Flowers entirely yellow, about 3 cms. diameter, sweet-scented, 2-5 in a drooping umbel; perianth segments spreading, ovate-apiculate, much shorter than the extremely long, narrow tube. Crown flat, scarcely crenate.

Borders of fields, etc. February-April. Naturalized near Grasse, Le Luc, etc.

### AGAVE *L.*

**Agave americana** *L.* (Plate XXXI). Originally from Mexico, this handsome plant has long been naturalized on the Mediterranean coast. It has been known in the Islands of Hyères for over two centuries.

### ORCHIDACEÆ.

Tribe I. ARETUSEÆ. Anthers terminal, free, 2-celled; pollen masses granular. Lip entire, spur long, stem and flowers violet. No leaves.....LIMODORUM.

Tribe II. NEOTTIEÆ. Anther a 2-celled deciduous cap, hinged on to the column; pollen masses 2 or 4, grains free or united by an elastic web.

\* *Anther hinged on the back of column; rostellum beaked.*

A leafless, brown saprophyte. Pollen powdery .....NEOTTIA.

Leaves 2, opposite. Lip free. Pollen powdery .....LISTERA.

Leaves several. Lip adnate to base of column. Pollen powdery. SPIRANTHES.

\*\* *Anther hinged on the top of the column; rostellum very short.*

Stem leafy. Flowers racemed; ovary straight .....EPIFACTIS.

Stem leafy. Flowers spiked; ovary twisted .....CEPHALANTHERA.

Tribe III. PHRYDEÆ. Anther 1, confluent with the column, 2-celled, erect; pollen masses 2, granular, grains united by an elastic web.

\* *Glands of stalks of pollen masses in pouches of the rostellum.*

Spur long; both glands in one pouch .....ORCHIS.

Spur 0; both glands in one pouch .....ACERAS.

Spur 0; glands in separate pouches .....OPHRYS.

Spur 0; lip 3-lobed, lateral lobes erect, central one tongue-shaped. SERAPIAS.

\*\* *Glands of stalks of pollen masses naked, not in pouches of the rostellum.*

Spur 0 .....HERMINIUM.

Spur long or short. Stigma 2-lobed or depressed .....HABENARIA.

Spur long or short. Stigma lateral, large, tumid .....GYMNADENIA.

The whole district, and especially the limestone area, is very rich in Orchids. In the Var alone no fewer than 60 species, 9 varieties, and 14 hybrids have been found, whereas there are only 45 species in the British Isles.

### LIMODORUM *Rich.*

**L. abortivum** *Swartz* (Plate XXIX). Stem 1-2½ ft. high, rigid, livid violet in colour; no leaves, but stem clothed with purplish, thick scales. Bracts membranous. Flowers large in a loose spike, violet and white, with darker markings on the lip, soon fading and turning yellow. Spur pendent, as long as the ovary. A parasite on various plants, especially the roots of pines.

Hill-sides and pine-woods, especially on the littoral. April-June.

### NEOTTIA *Adans.*

**N. nidus-avis** *Rich.* Bird's-nest Orchis. Root-stock a mass of thick succulent fibres. Stem 8-12 in. high, pale brown like the few loose sheathing scales. No leaves. Spike rather dense, 3 or 4 in. long, with 2 or 3 distant





1



2



3



4



5



6

PLATE XXIX.

1. *Serapias cordigera*.  
4. *Limodorum abortivum*.

2. *S. longipetala*.  
5. *Orchis laxiflora*.

3. *Orchis palustris*.  
6. *Orchis coriophora*.



flowers below it, all pale brown. Sepals broadly ovate, almost acute, petals more obtuse, lip twice as long, deeply forked into 2 oblong spreading lobes.

In the humus of mountain woods, rare. May-June. Sainte-Baume, Montrieux, Grasse, etc.

#### LISTERA *R. Br.*

**L. ovata** *R. Br.* Tway-blade. Root-stock creeping, with many thickish fibres. Stem 1-1½ ft. high, with 2 or 3 sheathing scales at base, and about half way up the stem are a pair of broadly ovate green leaves, 3-4 inches long. Raceme green, long, and slender. Lip twice as long as sepals or petals, and ending in 2 linear lobes.

Damp woods and grassy places, extending to the mountains. May-June. Esterel, Le Revest, Ampus, Nice, Menton, etc.

#### SPIRANTHES *Rich.*

**S. autumnalis** *Rich.* Lady's-tresses. Root-stock of 2 thick oblong tubers. Leaves 3 or 4, ovate or oblong, radical. Stem 6-8 in. high, green, with short sheathing, pointed scales. Flowers white, small, sweet-scented, in a spiral spike of about 2 inches, the bracts remaining erect on the opposite side.

Meadows, damp woods, and fresh places extending to the hills. August-October.

**S. æstivalis** *Rich.* Root-stock more horizontal, with longer tubers. Leaves radical, or near the base of the stem, narrow lanceolate. Stem rather taller, and flowers larger than in the common *Spiranthes*.

Grassy places and damp meadows. June-July.

#### CEPHALANTHERA *Rich.*

**C. rubra** *Rich.* Red Cephalanthera (Plate XXX). Root with fibres. Leaves lanceolate. Bracts leafy, as long as, or longer than the pubescent ovary. Flowers rose-pink, handsome, in a loose spike. Sepals and petals acute.

Woods and shady hill-sides, more common in the lower mountains. April-June.

**C. ensifolia** *Rich.* Narrow White Cephalanthera. Leaves linear-lanceolate. Bracts membranous, shorter than the glabrous ovary. Flowers numerous, pure white, in a long, loose spike. Sepals acute, petals obtuse. Lip usually with yellow spot.

Woods and stony slopes, fairly common. April-May.

**C. pallens** *Rich.* Pale Cephalanthera. Leaves ovate or ovate-lanceolate. Bracts leafy, at least as long as the glabrous ovary. Flowers few, cream colour, in a very loose spike. Sepals and petals obtuse.

Woods and stony slopes near the sea, but less rare among chestnut, oak, and beech trees in the hills. April June.

#### EPIPACTIS *Adans.*

**E. palustris** *Crantz* = *E. longifolia* *All.* (1785). Marsh Epipactis. Root-stock stoloniferous. Stem slender, 8-18 in. Lower leaves broadly lanceolate, the rest lanceolate. Flowers in loose racemes, sepals lanceolate, pale greenish-purple. Petals rather shorter, white more or less streaked with pink. Lip of the colour of the petals, long, and distinctly divided into 2 portions, the terminal lobe tubercled towards the base.

Damp meadows and swamps, rare. June-July. Near Ampus, Grasse, Fontan, etc.

**E. microphylla** *Swartz.* Small-leaved Epipactis. Differs from the others by its very small lanceolate leaves, shorter than the inter-nodes, and by its smooth veins. Flowers smaller, dull green and purplish. Root-stock without stolons.

Hill-sides and stony woods, rare. June. Mont Faron, Forêt du Dom, near Cavalière (H.S.T.), near Cimiez, Gairant, etc.

**E. atrorubens** *Schultes*. Dark Red Epipactis. A variable species, smaller in all its parts than the next; stem slender, 1-1½ ft. high, lower leaves ovate-acute, 1½-2 in. long, tip of lip broader than long, rounded, obscurely cuspidate. Flowers very dark red or purplish-brown (pale purple at S. Dalmazzo di Tenda!) in a long, one-sided raceme.

Woods and dry, sunny slopes, rare, chiefly in the lower mountains. June-July. Châteaudouble, St. Martin Vesubie, San Dalmazzo, etc.

**E. latifolia** *Sw.* = **E. Helleborine** *Crantz* (1769). Broad Helleborine. Root-stock short, with thick fibres. Stem robust, 1-2½ ft. high. Lower leaves oval, strongly ribbed, upper leaves lanceolate. Flowers pendulous, in a long one-sided raceme, varying from green to dull purple in colour. Sepals ovate-lanceolate. Lip rather small. Bracts longer than the flowers. A very variable species.

Wooded hills, fairly common. May-July.

### SERAPIAS L.

**S. cordigera** *L.* (Plate XXIX). Tubers usually sessile. Stem erect, 8-12 in., spotted at the base with narrow red spots. Leaves linear-lanceolate. Bracts often longer than the flowers. Middle lobe of the lip longer than the sepals, cordate-acuminate, usually dark brownish-red, hairy, and with 2 divergent callosities or ridges at the base. Pollen masses dark green.

Sandy places and wooded slopes on the littoral. April-May.

The colour of the flowers varies considerably; we have seen them from chocolate to wine colour, and also a few specimens from near Cavalaire in 1907 and 1913 were greenish-white, which form is exceedingly rare, and according to Mr. Rolfe of Kew agrees with **S. cordigera**, *β. floribus flavescens* *Tineo*, "Fl. Sicula," ii. pt. 2, p. 552 (1844), only hitherto recorded from Sicily.

**S. neglecta** *Not.* One of the 2 tubers stalked. Stems unspotted. Leaves linear-lanceolate. Flowers few, usually dark flesh coloured, the lip varying much, either flesh coloured, rosy pink, or yellowish. Lip longer than sepals, with 2 distinct nearly parallel ridges, the tongue broadly ovate-acuminate, with 3 rather indistinct little lobes at the apex; lateral lobes projecting beyond the sepals.

Sandy woods and grassy places. April-May. This and **S. cordigera** are particularly common in the Esterel and the Maures.

**S. longipetala** *Poll.* = **S. pseudo-cordigera** *Moricaud* (Plate XXIX). Tubers 2, usually quite sessile. Leaves linear-lanceolate, acute, not spotted. Stem 1 ft. or more high. Flowers 6-10, in a lax spike, deep red. Lip much longer than the bracts, hairy, with middle lobe lanceolate and bent back towards the stem, and with 2 distinct nearly parallel ridges. Pollen masses green, upper sepals connate. Regarded by Moggridge as a doubtful species.

Dry, sandy places, fields, etc. April-June.

**S. lingua** *L.* Tubers 2 or 3, one stalked. Stem erect, 6-10 in. high. Leaves linear-lanceolate; both free from spots. Bracts shorter than or equal to the flowers, which are few and small. Lip flesh-colour, pink, or yellowish, middle lobe nearly twice as long as the sepals, the united ridges forming one shining blackish callosity at the base. Pollen masses yellow or greenish-yellow.

Meadows and sandy swards. April-June. Usually common on the littoral, in the Esterel, etc.

**S. Olbia** *Verguin* in "Bull. Soc. Bot. de France" (1907), p. 597. This is a rare species, intermediate between the last and the next and found near the sea in sandy places on the Isthmus of Giens, Lavandou, les Vieux Salins below Hyères, and near La Seyne. April-June. Olbia was the Roman Hyères.

**S. occultata** *Gay* = **S. parviflora** *Parl.* A small flowered slender species with 2 oval subsessile tubers. Leaves lanceolate, not spotted. Flowers reddish, 3-8 in a long spike with bracts as long as the flowers. Lip about as long as the "sepals" and with 2 parallel ridges, middle lobe very small,

9 x 3 mm. in broadest part, narrow-lanceolate and rusty-red, turned back towards the ovary. (Measurements taken from living plants.)

Sandy, grassy places in the Var. April-June. The var. *anomala* Albert (1903) has 3 tubers of which 2 are stalked and the third is often imperfectly formed. It has been found below Hyères, at Cavalaire, etc. Several of the species of *Serapias* hybridize easily, e.g. :—

*S. triloba* Dupuy = *S. longipetala* x *Orchis laxiflora*. Tubers 2. Stem erect, 8-12 in. high. Leaves linear-lanceolate, acute, not spotted. Flowers in a short crowded spike, rich magenta. Sepals not united. Lip almost round, with spreading lateral lobes, and crenellated all round the edges.

Grassy places in fields at the mouth of the Nervia near Ventimiglia, where Mr. Bicknell tells us the parents grow together abundantly. April-May.

### OPHRYS L.

\* *Outer divisions of perianth ("sepals") green or yellowish.*

*O. aranifera* Huds. (1778) = *O. sphegodes* Mill. (1768). Spider Orchis. Very variable and with several named varieties. The sepals yellowish-green; the 2 petals two-thirds length of the sepals. Lip entire, or slightly 3-lobed, velvety, pale brown, with yellowish or greenish marks, broad, nearly flat, with no appendage. Column with a short straight beak. Stem somewhat zigzag.

Hill-sides, woods, and borders of fields, common. March-May.

*O. atrata* Lindl. (usually considered a var. of the last). The sepals green or slightly tinged with brown or pink; the petals flat, glabrous, and slightly coloured; lip without any lighter border, more velvety, the lateral lobes more bossed, the middle lobe with a short appendage.

Hill-sides and grassy places. April-May. Toulon, Le Luc, La Plage d'Hyères, Bordighera, San Remo, etc.

*O. litigiosa* Camus. Flowers much smaller than the last, 2-6 in a loose spike. The sepals yellow, ovate oblong; the petals linear-lanceolate, yellowish-brown. Lip shorter than the sepals, rounded and often apiculate, greenish-brown or grey, marked in the centre with a pale glabrous escutcheon. Column with short beak.

Grassy places on the littoral. March-May.

The var. *virescens* Gren. = *O. virescens* Philippe has greener perianth segments. It is found near Carqueiranne, Mont Faron, Mont Coudon, and the Gorge of Ollioules, but is rare.

*O. fusca* Lk. (Plate XXX). The sepals greenish-yellow, the 2 petals greenish-brown, rather shorter, linear obtuse, glabrous. Lip brown, velvety, with 2 oblong glabrous lead-coloured marks, 3-lobed, with middle lobe emarginate, without appendage. Column obtuse, not beaked.

Dry slopes and pine-woods, fairly common on the littoral and sometimes in large quantities, as at the foot of Coudon. March-April.

*O. lutea* Cav. The sepals yellowish-green; the petals shorter, linear obtuse, yellow. Lip rather long, reddish-brown with yellow border, and two oblong glabrous pale marks near the top. Lip 3-lobed, the central one emarginate, no appendage.

Hill-sides and grassy places on the littoral, less common than the last. April-May.

*O. muscifera* Huds. (Fly Orchis) has been seen, in the lower mountains, about Breil, Tenda, and St. Martin Vésubie, but is rare.

*O. speculum* Lk. The sepals yellowish-green; the petals finely subulate, much shorter, purplish-brown. Lip rather large and long, with a bluish, glabrous

<sup>1</sup> In *Ophrys* the 2 small inner perianth-segments are usually called "petals" in English books, and the outer segments merely "sepals".



escutcheon bordered with yellow and with reddish-brown hairy edges. Lip 3-lobed, the central lobe very large. Column obtuse, not beaked.

Dry, grassy places on the littoral, very rare. April. Found by Mr. F. Raine at the Vieux Salins near Hyères, and in 1865-6 Moggridge found two specimens behind Garavan near Menton. Not elsewhere in France.

**O. bombylliflora** Lk. Tubers 2-3, one being stalked. The sepals greenish, oval, spreading; the petals one-third of their length, reddish-green. Lip small, oval, rounded, very convex, purple-black, velvety, with glabrous mark, trilobed, the 2 lateral lobes vertical and pointed, the central broad lobe curved backwards. Flowers small, 1-4 in a loose raceme. Column obtuse, not beaked.

Meadows and sandy fields near the sea, rare. March-May. Almanarre, La Plage d'Hyères, near Menton and Ventimiglia, and by the R. Brague.

*\*\* Outer divisions of perianth ("sepals"), rose or nearly white.*

**O. apifera** Huds. Bee Orchis. The sepals ovate, white or pink, sometimes streaked with green, the petals half or one-third as long, narrow-lanceolate, greenish-pink, velvety. Lip very convex, broad, rich velvety brown, downy at the edges, and marked with paler greenish lines or spots; lobes small and turned down, the two lateral ones calcar, the middle one large and variable, with curved appendage. Column erect, with curved beak.

Grassy places, woods, and borders of fields, common. April-June.

The Bee Orchis is very variable in the S. of France and often taller than in England. On the sandy Isthmus de Giens, where so many interesting and uncommon plants grow, we have seen very fine specimens of a beautiful salmon-pink colour. Moggridge gave in his "Contributions to the Flora of Mentone" some interesting results of his observations on this group of Orchids.

**O. Bertolonii** Mor. (Plate XXX). The sepals pink or sometimes white, oblong; the petals shorter, linear, purplish, ciliate. Lip not gibbous, deep velvety purple with a smooth shining patch in the middle. A short appendage to the middle lobe. Column with a long beak, slightly bent forward.

Dry hill-sides and stony places, rare. April-June.

This plant, according to Moggridge, is "closely linked on by intermediates to the forms of *O. aranifera* with pink sepals and purplish lip," but can be readily distinguished from them "by its long horizontal lip with large depressed shield-shaped marking". Bicknell in "Flora of Bordighera and San Remo". See also note in the Misses Chamberlain's "Common Objects of the Riviera" (1912).

**O. arachnitiformis** Gren. and Philippe. The sepals rose, oblong; the petals half the length, smooth, brownish-pink. Lips almost quadrangular, dark velvety purple-brown, with 2 pale straight marking, the large middle lobe apiculate in the centre. Column with short, obtuse beak.

Dry, sandy and grassy places on the littoral of the Var. April-May.

**O. tenthredinifera** Willd. This rare species has a deeply emarginate lip and very broad pink outer sepals. It is recorded by Albert from grassy slopes towards Mont de Gantier near Solliès-Ville. April-May.

**O. fuciflora** H. G. Reich. = *O. arachnites* Lam. The sepals deep pink or rarely white, oblong or oval; the petals about one-third as long. Lip entire, almost truncate, dark velvety purple-brown, marked with green symmetric lines, and having an appendage curved upwards. Column with short beak. A handsome species.

Fields, sandy places, and wooded slopes, not common. March-May.

**O. Scolopax** Cavanilles. The sepals pink, oblong; the 2 petals about half or one-third the length, linear, pink. Lip very convex and almost cylindrical, deep purple-brown and velvety, marked with symmetrical green lines and having a 3-toothed appendage curving upward. Column with slender acute beak. Differs from the last chiefly in its very convex middle lobe.

Wooded slopes and under the olives near the coast. April-June.



1



2



3



4

PLATE XXX.

1. *Ophrys Bertolonii*.  
3. *Orchis provincialis*

2. *Ophrys fusca*.  
4. *Cephalanthera rubra*.





There are several *Ophrys* hybrids found in the Var. They include  $\times$  *O. Rainei Albert et Jahandiez* (*O. arachnites*  $\times$  *bombyliflora*?), named after the finder, who has done such good work among the Orchids. It was growing with the parents near Almanarre. Some pink forms of *O. aranifera* sent by the writer from Carqueiranne to Mr. Rolfe at Kew were thought by that authority to belong to *O. Ascheroni Nant.*, a hybrid between *O. aranifera* and *O. arachnites*.

#### ACERAS *R. Br.*

**A. anthropophora** *R. Br.* Man Orchis. Plant from 8-18 in. high, with entire tubers. Leaves ovate to oblong or nearly lanceolate. Spike slender, 2-4 in. long; flowers dull yellowish-green, the sepals converging over the column and petals. Lip narrow-linear, twice as long as sepals and sometimes compared to a hanging man, the two lateral lobes representing his arms and the middle longer and 2-cleft lobe his body and legs.

Dry pastures and shady woods, here and there. April-June.

#### ORCHIS *L.*

**O. hircina** *Crantz.* Lizard Orchis. Stem robust, 1-2 ft. high, leafy; tubers entire. Spike dense, 4-8 in. long; the flowers rather large, dirty greenish-white, of a disagreeable odour, with very long 3-lobed lip; the middle lobe an inch or more long, at first rolled inwards, twisted and ribbon-like, entire or notched at the tip, sepals converging over the column; petals small.

Borders of fields and dry pastures, rare. May-July. La Roque-Esclapon, Ampus, Châteaudouble, Drap, Bagnols, Contes, Vence, near Cannes and Grasse. Found on the Cannes golf-links by the Misses I. and H. Chamberlain.

**O. longibracteata** *Biv.* = *Barlia longibracteata* *Parl.* A very large and handsome Orchis, 1-2 ft. high. Leaves broad, elliptical, dark green. Flowers numerous in a dense oblong spike, rather sickly scented. Bracts longer than the flowers. Petals greenish, enclosed by the upper sepal. Lip 3-lobed, middle one deeply divided, lateral ones wavy, dull pink with greenish edges. Spur short, conical, less than half length of ovary. Pollen masses blackish-green.

Grassy banks and wooded slopes, fairly common. January-April. This remarkable plant is extremely abundant on a grassy bank separating the salt lagoon from the road leading from Almanarre to les Pesquiers; also under the Pines towards Giens (Var). A sort of emulsion is sometimes made from the juicy stems.

**O. intacta** *Lk.* = *Neotinea intacta* *H. G. Reich.* = *Habenaria intacta* *Benth.* Stem 6-12 in., slender, bearing a dense and somewhat twisted slender spike of very small pale pink flowers. Leaves oblong, spotted. Bracts shorter than ovary. Lip trifid, shorter than ovary, the lateral segments very narrow, middle one emarginate, bifid or pointed. Spur very short; pollen masses yellow.

Woods and stony slopes. April-May. It grows in the West of Ireland, but not elsewhere in northern Europe. Its range is very wide on the Mediterranean.

**O. ustulata** *L.* Burnt-tip Orchis. Plant 4-12 in. high, with a dense cylindrical spike of small flowers, the colour of the unopened ones at the top giving it a burnt tip aspect. Leaves few, broadly lanceolate. Bracts small. Sepals connivent but separate, dark red, arching over the small narrow petals. Lip white with red spots; the lateral lobes truncate, and the middle one divided into 2 narrow segments. Spur very short.

Borders of fields and woods, scarcer on the littoral than in the mountain region. April-June.

**O. purpurea** *Huds.* Stem tall and strong, 1-2 ft. high. Leaves large, oblong, shiny. Bracts much shorter than ovary. Flowers in a dense spike. Sepals united in a dark purple helmet, nearly black in bud. Lip 4-lobed, the two middle lobes much longer, variable in shape and colour but usually reddish-

purple with tufts of purple hairs. Spur half length of ovary, compressed at apex and emarginate.

Grassy places and dry hills and woods, rather rare. April-June.

**O. militaris** L. Stem erect, strong, 1-2 ft. high. Lower leaves large, oblong. Bracts much shorter than ovary. Sepals united almost to the apex in form of a helmet, pale lilac without, purple within. Lip 3-lobed with linear lateral divisions; the middle division with short diverging lobes and a small tooth between them, and dark tufts of hairs. Spur half length of ovary, pendent.

Woods, fields, and stony places, rather rare. May-June.

**O. simia** Lamk. Leaves oblong. Bracts much shorter than the ovary. Lip 3-lobed, with middle division divided into two narrow lobes nearly as long as the lateral divisions. All the lobes entire, very narrow, curved upwards. Spur pendent, much shorter than ovary. Flowers in a short oval spike, pink or pale lilac with spotted lip.

Borders of woods and dry slopes, rare. April-June. In the N. of the Var, and above Menton, Utelle, Berre, Biot, etc.

**O. tridentata** Scop. Plant less than a foot high. Leaves oblong-lanceolate. Bracts as long as the ovary or shorter. Sepals united to form a helmet, acuminate. Flowers in a dense ovoid or subglobular head, varying in colour from pale pink to purple. Lip horizontal, 3-lobed, the middle lobe broad at the end, orbiculate, with a small tooth bent back under the limb. Spur pendent, half length of ovary. Pollen masses greenish.

Dry woods and stony places. April-June.

**O. lactea** Poir. = **O. tridentata** var. **acuminata** G. G. Plant smaller than the last, from which it is distinguished by its very pale pink or whitish flowers, spotted with purple, longer and more conical head, and the lateral lobes of the lip being obliquely obovate.

Stony hills and borders of woods. March-May.

**O. coriophora** L. (Plate XXIX). Stems less than a foot high. Leaves numerous, close, linear-lanceolate. Bracts longer than ovary. Flowers small, crowded in a dense cylindrical spike, pale dull red and green. The sepals united into a dull dark red helmet; lip 3-lobed, livid red and spotted, the middle lobe entire, lanceolate; lateral lobes toothed at the edge. Spur thick, conical, curved, shorter than ovary. Pollen masses yellow.

Grassy places and thickets. May-June. In the Var the only form appears to be the var. **fragrans** G. G. (**O. fragrans** Pollini), which has a sweet but sickly odour, larger and paler flowers in a denser spike. The spur is more clearly curved. **O. coriophora** L. is the plant more frequently found in the lower mountains, though also on the Côte d'Azur itself.

**O. papilionacea** L. Stem about a foot high. Leaves linear-lanceolate. Bracts pinkish, 3-5 nerved, longer than ovary. Spike rather lax, with 6-16 flowers which are partly scarlet and partly magenta. Sepals veined with red or green. Lip large, somewhat fan-shaped, usually crenately toothed, with brilliant stripes above. Spur pendent, shorter than ovary, nearly straight, conical at the base. Pollen masses blackish.

Meadows, borders of woods, and pastures. April-May. Rather rare, but less so in Liguria, especially in the Chestnut region.

**O. Morio** L. Green-winged Orchis. Leaves oblong. Bracts rather pink as long as the ovary. Sepals converging over the column and small petals in form of a helmet. Lip with 3 obtuse lobes, the middle one notched. Spur ascendant, shorter than ovary. Flowers rich purple, violet, rose or white streaked with green. Though recorded in books we have never seen the type (as it grows in England) in the south, and agree with Mr. Bicknell that "perhaps all our plants are the var. **picta** = **O. picta** Lois., though the density or laxity of the spike and the size of the flowers are very variable" ("Fl. of Bordighera and S. Remo," p. 264). **O. picta** has smaller and paler purple flowers, longer spur,

pointed leaves, and subsessile tubers. **O. Champagneuxi** *Barnéoud* is another variety, with one or both tubers stalked. Both forms are frequent in dry woods and stony slopes on the littoral, **O. picta** sometimes being abundant. It is a much more slender and often taller plant than **O. Morio** of northern Europe. February-May.

**O. longicornu** *Poir.* Allied to **O. Morio**. Plant 8-14 in. high. Flowers in a lax oblong spike. Sepals obtuse, purple with green stripes. Lip 3-lobed; lateral lobes reflexed, dark violet the middle one very short, white spotted with purple. Spur very long, ascending and arched, almost as long as the ovary.

Dry grassy places, very rare. March-May. Near Bandol in the Var and also recorded from les Alpes-Marit.

**O. saccata** *Ten.* Leaves oblong-lanceolate, usually spotted with brown. Flowers dark purple, few, in a short lax raceme. Bracts large, longer than the ovary. Sepals obtuse, the two petals connivent. Lip simple, oboval wedge-shaped, wavy at the edge. Spur pendent, thick, conical, much shorter than the ovary.

Wooded slopes and grassy places in the Var, very rare. March-April. Near Hyères and Pierrefew. Not elsewhere known in France.

**O. pallens** *L.* A robust plant with large shiny pale green leaves and sulphur-coloured flowers, without spots, in a dense spike, having an unpleasant odour. Spur cylindrical and either horizontal or ascending.

Mountain woods and pastures in the Maritime Alps, usually above the region taken in this work. May.

**O. provincialis** *Balb.* (Plate XXX). A more slender species, with spotted, oblong-lanceolate leaves. Bracts with 1-3 nerves shorter than ovary. Flowers 10-15 in a lax spike, pale yellow with small red spots on lip. Lip 3-lobed, the middle one rather smaller, truncate and emarginate. Spur as long as the ovary. Pollen masses yellow.

Mountain woods and grassy places under the chestnuts. April-May. Sainte-Baume, Colle-Noire, Fenouillet, Forêt du Dom, Esterel, Contes, Berres, Menton, etc. Especially common in Liguria.

**O. olbiensis** *Reut.* = **O. mascula** *L.* var. **olivetorum** *Gren.* This seems to be the form of **O. mascula** which grows on the littoral on wooded slopes. April-June. Leaves not spotted, oblong-lanceolate, bracts purplish, 1-nerved; lip almost equally 3-lobed. Spur as long as the ovary. Flowers magenta coloured, spotted, in a lax spike. Ardoino said this plant is more like a red-flowered **O. provincialis** than the true **O. mascula**, which is sub-Alpine in the south.

**O. mascula** *L.* "Early purple Orchis." Plant 9-20 in. Leaves oblong-lanceolate obtuse, usually spotted with brown. Flowers reddish-purple in an oval rather loose spike. Bracts 1-3 nerved; lip coloured, often downy in centre, spotted, 3-lobed, the middle lobe emarginate. Spur ascending, club-shaped, as long as the ovary.

Mountain woods, not on the littoral, but at Sainte-Baume, La Bastide, Mont de la Chens and further east. April-May.

**O. laxiflora** *Lam.* (Plate XXIX). Tubers globose. Plant 1-2 ft. high. Leaves lanceolate, acute. Bracts with 5-7 nerves, shorter than ovary. Flowers far apart, in a long loose spike, dark purple without spots, but frequently with a white blotch on the lip. Lip large, 3-lobed, the lateral lobes bent back, middle lobe often wanting or almost so. Spur shorter than ovary. Pollen masses greenish.

Wet meadows, common. April-June.

**O. palustris** *Yacq.* (Plate XXIX). Differs from the last by its narrower leaves, bracts longer than the ovary; its middle lobe of the lip larger, and clearly notched, and its paler flowers in a less lax spike.



Wet meadows and marshes. May-June. Sometimes in large quantity, as in the Ceinturon meadows near Hyères.

**O. pyramidalis** L. = **Anacamptis pyramidalis** Rich. Pyramidal Orchis. Plant 1-2 ft. high. Leaves lanceolate, narrow and pointed. Flowers in a very dense ovoid or conical spike, bright rose, rather small and often strongly scented. Spur very slender, longer than ovary. Petals conniving over the column. Lip broad, 3-lobed, the lobes usually equal.

Dry slopes and borders of woods, chiefly on the lower limestone hills. May-June.

**O. sambucina** L. Tubers lobed. Stem thick. Leaves oblong, not spotted. Bracts longer than the flowers, which are straw-coloured (or reddish-purple in var. **purpurea** K. = **O. incarnata** Willd.) in a dense spike. Lips obscurely 3-lobed, convex, crenate. Spur large, pendent, cylindrical, as long as the ovary.

Mountain pastures (including the N. of the Var) from a height of about 600 m. April-June. Both have also been lately seen in the Forêt de Sainte-Baume.

**O. maculata** L. Spotted Orchis. Tubers lobed and almost palmate. Leaves oblong, spotted. Bracts shorter than the flowers, which are pale lilac or white spotted with purple, in a dense conical head. Lip with 3 lobes the centre one very small. Spur pendent, rather shorter than the ovary. Stem not hollow.

Damp woods and meadows, rare on the littoral, but common in the mountains and in the Chestnut zone. May-June. Esterel, Bagnols, Montrieux, Ampus, Pierrefew, etc.

**O. latifolia** L. Broad-leaved Marsh Orchis. Tubers digitate with almost parallel lobes. Stem hollow. Stem robust. Leaves oblong, broad, often spotted. Bracts longer than the flowers, often purplish. Lip 3-lobed, the middle one very small. Spur large, pendent, sub-conical, almost as long as ovary. Flowers wine-red spotted with purple, in a dense oval or oblong spike.

Damp meadows and marshes. May-June.

**O. incarnata** L. Closely allied to the last. Tubers with spreading lobes. Leaves narrower, lanceolate, not spotted. Flowers paler, rose or flesh coloured, spotted with purple.

Damp meadows and marshes, rare. May-July. Found by Albert in the meadows of Fontigon near Ampus, and by Raine in the Ceinturon marshes near Hyères.

#### HERMINIUM R. Br.

**H. Monorchis** Br. Musk Orchis. This tiny green Orchis without any spur is rare in the Maritime Alps. We once found it among moss in the chestnut grove near S. Dalmazzo di Tenda, at about 2300 ft.

#### GYMNADENIA R. Br.

**G. conopsea** R. Br. Sweet-scented Orchis. Tubers palmately divided. Stem leafy 12-18 in. high. Leaves lanceolate or linear-lanceolate, sheathing. Bracts 3-nerved, about as long as ovary. Flowers numerous, in a dense cylindrical spike, usually rose coloured, or various shades of purplish-pink, rarely white, with slight scent of vanilla. Lip 3-lobed, the lobes nearly alike, obtuse or the middle one acute. Spur filiform, bent downwards, sometimes twice length of ovary.

Grassy slopes and mountain woods. May, June.

#### HABENARIA Willd.

**H. bifolia** Br. = **Platanthera bifolia** Rich. Butterfly Orchis. Tubers entire. Stem 12-18 in. with 2 large broadly ovate to oblong leaves at the base. Flowers yellowish-white, sweet-scented, rather large, in a loose spike 3-5 in. long, and with lanceolate bracts about length of ovary. Two

lateral sepals spreading. Lip linear, entire, obtuse. Spur slender, filiform, curved, twice length of ovary. Pollinia usually parallel.

Woods and shady places in the hills, fairly common. May-June.

**H. montana** *Durand et Schinz.* Differs from the last in being rather taller and having 2 or 3 large leaves. Pollinia broadly converging (not parallel). Flowers larger, greenish-white, less scented. Lip lanceolate acute. Spur filiform, club-shaped.

Mountain woods and grassy places, rare. May-June. Forest of Sainte-Baume, Ampus, La Sauvette (Var), Brans, Berre, Mont Mulacé above Menton.

**H. viridis** *Br.* (Frog Orchis) grows in the Maritime Alps, but very rarely descends below 1000 m.

## PALMACEÆ.

**Chamærops humilis** formerly grew as a probable native on the rocks between Monaco and Mont Alban, but is now extinct. The two commonest Palms which have been planted on the Riviera are the tall Date Palm (**Phoenix dactylifera**) and **P. canariensis** (Plate XXXII).

## CYPERACEÆ.

Tribe I. SCIRPEÆ. Spikelets simple, many flowered; flowers hermaphrodite, bracteoles absent. Perianth 0, or of scales or bristles.

Spikelets compressed; glumes distichous, deciduous ..... CYPERUS.

Spikelets usually clustered and lateral. Bristles 0 or 3-8 included ..... SCIRPUS.

Spikelet solitary, terminal. Bristles 3-8 included ..... HELIOCHARIS.

Scales imbricate all round, lower larger. Style compressed ciliate, base enlarged. Spikelets ovoid. Stigmas 2, fringed. The only French species is a small annual ..... FIMBRISTYLIS.

Tribe II. RHYNCHOSPOREÆ. "Spikelets" cymose, one to few flowered, upper flower hermaphrodite or male. Perianth 0 or of bristles.

Spikelets compressed; glumes distichous. Bristles various or 0. Nut not beaked ..... SCHÆNUS.

Spikelets terete. Bristles 0. Nut obtuse ..... CLADIUM.

Tribe III. CARICEÆ. Spikelets terete, 1-2 sexual, rarely dioecious, many fld., solitary or in heads, spikes, or panicles. Flowers unisexual; male naked; female enclosed in a perigynium ..... CAREX.

## CYPERUS L.

**C. fuscus** *L.* Small Brown Cyperus. A dwarf annual species with corymbose or capitate spikelets. Leaves flat and grass-like. Stem triquetrous. Rays few, short and usually simple. Spikelets crowded, slender, yellowish. Glumes many; oblong-ovate, subacute. Nut minute, white.

Damp sandy places, fairly common on the littoral. June-August.

**C. aureus** *Ten.* Spikelets reddish-yellow, 6-12 mm. long. Stem triquetrous, a foot or more high. Leaves linear, keeled (4-8 mm.). Scales loosely imbricate, obtuse, reddish. Stamens and stigmas 3. Nut triquetrous, half length of the scale. Rhizomes with occasional subglobular tubers.

Sandy places near Toulon and Menton, rare. August-September.

**C. rotundus** *DC.* = **C. olivaris** *Targ.* Allied to the last. Stems slender, triquetrous. Leaves numerous, long, 2-6 mm. broad, keeled. Rays 4-10 erect, very unequal, equal to or shorter than the 2-4 leaf-like bracts. Spikelets reddish-brown, linear, 10-20 mm. long. Scales densely imbricate, subacute, feebly nerved. Stigmas 3. Rhizomes with a few blackish ovoid tubers.

Damp, sandy places. July-October.

**C. longus** *L.* Galingale. Stems 2-3 ft. high, stout, erect, triquetrous, leafy at base. Leaves few, flat, keeled. Rays many, slender, again umbellate. Bracts leaf-like, longer than the rays. Spikelets linear, curved, distichously

crowded in an umbellate cyme. Glumes lanceolate, midrib green, scabrid. Nut triquetrous, pale.

Damp places, sides of streams, etc., fairly common on the littoral. June-August.

**C. badius** Desf. Perhaps only a var. of the last, with larger spikelets and denser clusters. It grows in similar places and is equally common. June-August.

**C. globosus** All. Root fibrous. Stem triquetrous. Leaves narrow, shorter than the stem. Spikelets linear-lanceolate, in 1-3 globose heads, one being sessile or nearly so, brownish or pinkish-yellow in colour. Glumes oblong obtuse. Stamens 2. Stigmas 2. Nut obovate, much compressed, dotted and rough.

Marshy places, rare. At the mouth of the River Var near Nice, and at Ventimiglia and Menton. June-November.

**C. flavescens** L. Root fibrous, annual. Stem somewhat triquetrous, with narrow linear leaves shorter than the stem. Spikelets numerous, linear-lanceolate, yellowish; in bundles partly sessile and partly stalked. Glumes ovate, 1-nerved. Stamens and stigmas 2 each. Nuts very minute, much compressed, dotted and rough.

Marshes and damp, sandy places, uncommon. July-September.

**C. schœnoides** Griseb. Root-stock creeping. Stem cylindrical, erect and stiff. Leaves linear, channelled, glaucous, reflexed. Spikelets ovate-lanceolate, glumes green with purple at the base; spikelets brown, arranged in a compact almost globose head. Stamens and stigmas 3. Nut ovate-elliptical, trigonous.

Sea-sands, common along the shore. May-July.

**C. serotinus** Rottb. is a species not unlike **C. longus**, but more glaucous and with thick, compressed triquetrous stem. Scales loosely imbricate, obtuse, many-nerved, pale at border. Stamens 3, stigmas 2. Nut obovate-compressed. Spikelets reddish-brown, lanceolate, very spreading.

Marshy places and borders of streams. August-October. By the River Var near Nice, near Fréjus, St. Raphael, etc. Uncommon.

### SCIRPUS L.

**S. maritimus** L. Root-stock creeping. Stems triangular, 2-4 ft. high, with long flat-pointed leaves often far exceeding the stem. Spikelets rich brown, ovoid or lanceolate, sometimes 2 or 3 in a close sessile cluster, more often 8-10 in a compound cluster, the outer ones stalked. Bracts long, leafy, pointed. Glumes notched, with a fine point. Style 3-cleft.

Marshes near the sea and ditches, often in great quantity. April-July.

**S. lacustris** L. Lake Scirpus. Root-stock creeping. Stems stout, erect, 3-8 ft. high, cylindrical at base, gradually tapering upwards and becoming triangular. Spikelets ovoid or oblong, in a compound lateral umbel or cluster, with 2 or 3 leaf-like bracts. Glumes numerous, broad, brown, fringed, notched at top, with a little mucro in the notch. Style 2 or 3 cleft. Nut smooth.

Ponds, borders of rivers, and marshes, uncommon. May-July.

**S. Tabernæmontani** Gmel. A sub-species of the last, but more approaching **S. maritimus** in habit and size. Style 2-cleft; glumes with raised dots, but these characters are very inconstant.

Marshes near the sea, near Toulon, Hyères, and Ampus.

**S. Holoschænus** L. Clustered Scirpus. A stiff rush-like plant, with cylindrical stems, 2-3 ft. high, with 1 or 2 stiff leaves sheathing the base. Spikelets very small and numerous, closely packed in one or more globular heads forming an umbel, the longest stiff outer bract forming a continuation of the stem. Spikelets light brown in colour. Style usually 2-cleft.

Damp places and road-sides, common throughout the district. May-July.

**S. pungens** Vahl. is a smaller plant. One or two of the sheaths bear short, narrow, keeled leaves. Spikelets few (3-6), sessile in a close cluster. Outer bracts stiff, triangular.



Marshes and lakes near the sea, rare. June-August. Near Fréjus and near Hyères (Ceinturon marshes).

**S. setaceus** *L.* Stems slender, 2-6 in. high, in little dense tufts, with one or two short subulate leaves on each stem, sheathing it at the base. Spikelets ovoid, solitary or 2 or 3 in a little sessile cluster, the subulate outer bract forming a continuation of the stem. Glumes broad, short, dark brown with a green midrib.

Damp, sandy places and places flooded in winter. May-August. Near Toulon, Bormes, Vallon de la Sauvette, the R. Verne near Collobrières, etc. **S. Savii** *Seb. et Maur.* occurs in similar places.

#### ELEOCHARIS *Br.*

**E. palustris** *Br.* and **E. multicaulis** *Sm.* are species with numerous erect stems springing from a creeping root-stock, all leafless except for one or two short sheaths at the base. The spikelets are solitary and terminal. **E. multicaulis** is very rare, being found in the Esterel and by the R. Var near Nice in June and July. The genus is often spelt *Heleocharis*.

#### FIMBRISTYLIS *Vahl.*

**F. dichotoma** *Vahl.* A slender annual, 3-8 in. high, pubescent on the leaves and bracts. Leaves very narrow filiform, about as long as the stems. Inflorescence an umbel of unequal rays, often passed by the setaceous bracts. Spikelets pale yellow, oblong. Stigmas 2-fringed or ciliate. Nut naked, obovate compressed, fawn colour.

Damp, sandy places at the mouth of the R. Var in les Alpes-Marit. July-October. Its only known station in France though widely distributed in Southern Europe and the hot countries of the globe.

#### SCHÆNUS *L.*

**S. nigricans** *L.* Black Schœnus, "Bog Rush". Stems terete, 6-30 in. in dense hard tufts of matted sheaths and leaves, wiry, leafless above. Sheaths reddish-brown or black, shining. Leaves wiry, terete, with convolute margins. Spikes obovoid, very dark brown, shining, usually shorter than the setaceous bract. Spikelets 4-10, erect, linear-oblong. Glumes irregular distichous, oblong-lanceolate, subacute. Nut small, ovoid, white.

Damp, sandy places, especially near the sea, common. April-July.

#### CLADIUM *Patr. Brown.*

**C. Mariscus** *Br.* A tall rush-like plant with creeping root-stock and leafy stems, 3-6 ft. high. Leaves nearly erect, smooth and sheathing at base, then keeled and ending in a long point; the keel and edges very rough and cutting, being provided with minute, sharp teeth. Spikelets pale brown, in small clusters, arranged in panicles in the upper axils, the whole forming a terminal leafy panicle. Nut tapering at the top. Glumes imbricated round the axis.

Ditches, marshes, rare. June-July. Near Toulon, Hyères, Le Pradet, La Crau, Fréjus, Cannes, Golfe Jouan, and R. Var.

#### CAREX *L.* SEDGE.

The following are the chief species of *Carex* found in the district dealt with in this book. Some others occur in the Maritime Alps, beyond our region. Let us briefly describe seven very characteristic species, only one of which is found in Great Britain and that of recent discovery.

**C. chætophylla** *Steud.* Closely allied to **C. divisa** *Huds.* (which is less common) but more slender and with filiform stems 6-18 in. high. Root-stock creeping. Leaves very narrow, channelled and setiform. Spike small, ovoid, dense, with 2-5 male spikelets at the top, often exceeded by a setaceous bract. Glumes ovate-acuminate. Fruit as long as the glume and with a rather long beak.

Grassy, sandy places and road-sides, very common on the littoral. April-

May. This species was discovered new to England by the writer in two places near Seaford (Sussex) some years ago.

**C. longiseta** Brot. = **C. Linkii** Schk. Root-stock tufted. Stems very slender, triquetrous. Leaves often longer than the stems, very narrow ( $\frac{1}{2}$ -2 mm.), tufted. Spikelets 2-4, pale green, sessile or the lower ones peduncled, in a loose spike, the males being at the top. Glumes acuminate. Leaf-like bracts exceeding the stem. Stigmas 3. Fruit greenish, elliptical-triangular, with short beak shorter than the glume.

Dry woods and hill-sides. April-June.

**C. œdispostyla** Duval-Youve. Somewhat similar to the last in habit and in habitat. Stem much exceeded by the long narrow leaves. Spikelets solitary, few flowered on long filiform peduncles, sometimes springing from near the base. Bracts none, and replaced by glumes with a long leaf-like point. Stigmas 3. Fruit greenish, glabrous, ovoid trigonous, obtuse, shorter than the glume.

Dry, sandy woods. April-May.

**C. Halleriana** Asso. Stems about as long as the leaves (2-3 mm. broad). Male spikelet solitary, terminal, oblong, reddish. Female spikelets 2-5, globular, the lower one springing from the base on a very long filiform peduncle. Bracts sheathing, with leaf-like point. Glumes acuminate, scariosus. Stigmas 3. Fruit fawn-grey colour, obovate trigonous, strongly nerved, and with very short beak.

Dry places and stony woods, fairly common. February-June.

**C. serrulata** Bivon. This largely takes the place of **C. glauca** which is less common on the Mediterranean littoral. Plant glaucous, with stoloniferous root-stock. Leaves scabrous, 2-5 mm. wide. Male spikelets 1-3, linear-oblong; females 2-3 cylindrical, erect, shortly peduncled, brownish. Glumes green, ovate-acuminate. Fruit elliptical lanceolate, shorter than the glume.

Stony places and hill-sides, common. April-June.

**C. hispida** Will. A tall robust sedge, 2-3 ft. high. Leaves long, very stiff, 5-10 mm. broad, scabrous. Male spikelets 3-5 cylindrical, brown; females 3-4 thicker, very dense, erect, subsessile, partly white and brown. Glumes greenish-brown, lanceolate aristate. Stigmas 3. Fruit green, hispid, obovate compressed, ciliate, with beak shorter than the glume.

Ditches and marshes, April-June.

**C. obliensis** Ford. A glabrous species, 1-2 ft. high, near **C. panicea** L., with short, thick, tufted root-stock. Stem curved at the top, triquetrous. Leaves long, 4-8 mm. broad, scabrous. Male spikelet solitary, linear, reddish; females 2-3 oblong, rather loose, short peduncled. Bracts sheathing, often as long as the stem. Glumes whitish, with green keel. Stigmas 3. Fruit pale rust colour, ovoid-trigonous, attenuated at both ends and having a short truncate beak.

Dry woods and other places. April-June.

The following may be briefly mentioned: **C. disticha** Huds., rather rare in damp places; **C. vulpina** L., common; **C. muricata** L., **C. divulsa** Good., and **C. remota**, all fairly common; **C. leporina** L. and **C. depressa** Lk., damp woods in the Esterel; **C. stricta** Good., **C. vulgaris** Fries, and **C. acuta** Fries, in damp places; **C. glauca** Murr., commoner in the north part of the district than near the coast; **C. riparia** Curt. and **C. acutiformis** Ehrh., by water; **C. hirta** L., in damp meadows; **C. tomentosa** L., in woods and meadows, chiefly on limestone; **C. humilis** Ley., on the summit of Mont Faron near Toulon; **C. præcox** Jacq., **C. nitida** Host., sandy, grassy places, very rare; **C. panicea** L., moist woods and meadows; **C. depauperata** Good., **C. silvatica** Huds., and **C. Pseudocyperus** L., all rare; **C. pendula** Huds., not uncommon in damp, shady places and by water; **C. distans** L. and **C. punctata** Gaud., damp places; **C. pallescens** L., in mountain woods of the Esterel, rare; **C. extensa** Good., common on damp sands and marshes near the sea; **C. flava** L. and **C. Ederi** Ehrh., both rare in damp, sandy places.

In addition to the above, most of which occur in both Departments, there are a few more species which are recorded from les Alpes-Marit., excluding those

in the higher mountains: *C. paniculata* L., marshes in the mountains; *C. elongata* L., at Lupega; *C. canescens* L., in the lower mountains; *C. digitata* L., Gorge of Saorge, etc., on limestone; *C. Mairii* Coss. et G., rare in damp places near Nice; *C. vesicaria* L., River Var near Nice, and *C. paludosa* Good., in ditches near Nice, etc.

## GRAMINEÆ.

No less a botanist than Sir J. D. Hooker remarked that "the tribes and genera of Grasses are most difficult of classification. Many systems have been proposed."<sup>1</sup> We give a table of the Tribes, showing a natural grouping of the genera; and instead of giving a key to the very numerous genera, we have given the chief generic characters in the body of the work. About 70 genera, comprising at least 230 species and sub-species, have been recorded from the area dealt with. Of these about 215 species and sub-species occur in the Department of the Var alone. It is impossible here to briefly describe more than about 85 species, though most of the others are mentioned. The following sequence is based upon that adopted with greater or less similarity by Coste, Ardoino, Arcangeli, and Albert and Jahandiez in their respective Floras. Some of the generic characters are taken from Babington's "Manual of British Botany"; others, together with a few of the short specific characters, are taken from Woods' "Tourist's Flora" (1850). The term "pales" used by these two writers to include the fertile or flower-glume as well as the pale, has been dropped in accordance with modern custom. The very useful little "Genera of British Plants," by H. G. Carter, M.B. (1913), came into my hands too late to be of service here.

The genera may be grouped in the following tribes or sub-tribes. (This arrangement is somewhat eclectic, though based upon Hooker's "Student's Flora") :—

1. **PHALARIDÆ.** Spikelets laterally compressed; rachilla not produced beyond the uppermost glume. Glumes 4, uppermost only with a 2-sexual flower. Pales 0, or in the perfect flower 1-nerved.—*Mibora* (sometimes placed in Agrostidæ), *Anthoxanthum*, *Phalaris*, *Crypsis*, *Phleum*, *Alopecurus*.

2. **SESLERIDÆ.** Spikelets subspicate or capitate, with empty glumes (imperfect spikelets) on the pedicels below them.—*Sesleria*, *Echinaria*.

3. **PANICÆ.** Spikelets dorsally compressed. Fertile-glume 3- or more nerved, not awned, hardening round the fruit.—*Tragus*, *Setaria*, *Panicum*, *Digitaria*.

4. **CHLORIDÆ.** Spikelets crowded in two close rows, forming a one-sided spike or raceme with a continuous (not jointed) rachis.—*Cynodon*, *Spartina*.

5. **ANDROPOGONÆ.** Spikelets hermaphrodite, or male and hermaphrodite, each male standing close to a hermaphrodite.—*Andropogon*, *Sorghum*, *Saccharum*.

6. **ARUNDINÆ.** Spikelets 2- or more fld.; rachilla bearded with long, silky hairs.—*Arundo*, *Phragmites*, *Ampelodesmos*.

7. **AGROSTIDÆ.** Spikelets terete or laterally compressed; rachilla produced or not beyond the flower-glume. Glumes 3 (2 empty), flower solitary, 2-sexual; pales 2-nerved.—*Ammophila*, *Calamagrostis*, *Agrostis*, *Sporobolus*, *Gastridium*, *Polypogon*, *Lagurus*, *Stipa*, *Piptatherum*.

8. **AVENÆ.** Spikelets paniced, terete, or laterally compressed, usually 2-flowered; rachilla produced beyond the flower-glume (except in some sub-species of *Aira*). Glumes 4 or more, 2 lowest empty, 2 or more upper flowering with a dorsal bent and twisted awn (except some species of *Aira* and *Deschampsia*).—*Aira*, *Corynephorus*, *Ventenata*, *Avena*, *Trisetum*, *Arrhenatherum*, *Holcus*, *Gaudinia*.

<sup>1</sup> "The Student's Flora of the British Isles," Ed. III, p. 466.



9. **FESTUCEÆ**. Spikelets paniced or subspicate, terete, or laterally compressed, 2 or more flowered; rachilla usually produced beyond the flower-glume, often bearing a rudimentary glume. Glumes 4 or more, 2 lowest empty, shorter than the flowering. Awn terminal or o.—*Sieglingia*, *Koeleria*, *Glyceria*, *Catabrosa*, *Poa*, *Eragrostis*, *Molinia*, *Melica*, *Briza*, *Sclerochloa*, *Dactylis*, *Cynosurus*, *Lamarckia*, *Vulpia*, *Festuca*, *Bromus*.

10. **HORDEÆ**. Spikelets 1 or more flowered, sessile in 2 opposite rows on a simple rachis; rachilla produced beyond the uppermost flower-glume (except in *Nardus*). Flower-glume with a terminal awn or o.

Sub-Tribe **ELYMEÆ**. Spikelets 2 or more in each notch, collateral; the central perfect; the lateral perfect or reduced to bristles.—*Hordeum*, *Elymus*.

Sub-Tribe **TRITICEÆ**. Spikelets solitary in the notches, 3- or more flowered.—*Aegilops*, *Triticum*, *Lolium*, *Brachypodium*.

Sub-Tribe **LEPTUREÆ**. Spikes solitary in the notches, 1-2-flowered.—*Nardurus*, *Lepturus*, *Psilurus*, *Nardus*.

#### MIBORA *Adans.*

Inflorescence a somewhat one-sided raceme. Glumes not keeled, blunt. Flower 1. Fertile glume scarious, very hairy, blunt, not awned.

**M. minima** *Desv.* A very small, tufted annual, rarely 3 in. high. Stems capillary, leaves short and narrow, with thin sheaths. Spikelets small, purplish, almost sessile in a simple slender spike. Outer glumes obtuse, nearly equal. Flowering glume shorter, very thin and scarious, hairy outside, jagged at top but not awned.

Sandy fields, here and there. February-April.

#### ANTHOXANTHUM *L.* VERNAL GRASS.

Barren glumes 4, the inner pair awned and enclosing 1 fertile glume and 1 small pale. Stamens 2. Fertile glume broad, obtuse, and awnless.

**A. odoratum** *L.* Sweet-scented Vernal Grass. Panicle spike-like, one-sided at base, 1½-2 in. long. Outer glumes very pointed. Flowering glumes usually included, or rarely the longest awn slightly protrudes.

Grassy places, especially in hilly meadows. May-June.

**A. aristatum** *Boiss.* The upper awn much exceeds the top of the spikelet, and the fertile flower is not half as long as the sterile glumes. Annual or biennial.

Crops and sandy fields near le Cannet du Luc (Var). May-July.

#### PHALARIS *L.*

Barren glumes boat-shaped, keeled, membranous, nearly equal, exceeding the flower. Pale 1-nerved, closely surrounding the fruit. Rudimentary flowers, 1-2, scale-like. Fertile glume broad. Keel often winged. Spikelets compressed.

**P. arundinacea** *L.* Reed-like, 2-3 ft. high, with rather broad, long leaves, densely tufted at the base. Spikelets numerous, in a spreading panicle 6-8 in. long. Outer glumes lanceolate and pointed but not awned, keeled, but not winged, pale green or whitish with green nerve.

Ditches and watery places. June-July.

**P. cærulescens** *Desf.* Panicle spike-like, cylindrical. Glumes acute. Wing dentate, terminating abruptly. No barren floret. Pales thin, nearly smooth. Roots beaded with 1-2 large tubers. Plant 2-3 ft. high.

Dry meadows and borders of fields. April-June.

**P. nodosa** *L.* Panicle spike-like, lanceolate. Glumes acute. Wing narrow, entire. Neutral floret sublanceolate, villous as well as the pale. Roots formed of 2-4 small tubers. Plant 2-3 ft. high.

Damp places, road-sides, etc. May-June.

**P. minor** Retz. Panicle spike-like, oblong. Glumes acuminate. Wing narrow, jagged. Outer barren floret a minute fleshy scale, inner one membranous, half as long as the villous pale. Plant annual, 1-2 ft. high.

Sandy and grassy places, uncommon. May-June.

**P. paradoxa** L. Raceme spike-like, obovate-cylindric; middle and upper branches somewhat cymose. Small, blunt, neutral spikelets mixed with the others at the base of the spike. Annual, 1-2 ft. high. Stem leafy to the top.

Cultivated fields. April-June.

**P. brachystachys** Lk. Spike ovoid. Glumes acute. Wing entire. Neutral florets 2, very small, ovate, membranous.

Fields and uncultivated places. May-June.

**P. canariensis** L. Canary Grass. This well-known grass, imported from the Canary Isles and N. Africa, and cultivated to feed birds with, occurs here and there in a "wild" state. The panicle is ovoid. Wing rounded, nearly entire. Neutral florets 2, nearly equal, more than half as long as the fertile ones.

Sandy fields. May-June. Annual.

#### CRYPISIS Ait.

Spikelets scattered, 1-flowered, in a small dense head, which is usually included in a common involucre. Glumes membranous, unarmed. Fertile glume, entire, membranous, unarmed, as long as the glumes.

**C. aculeata** Ait. A small annual, usually glabrous, with spreading, compressed branches and glaucous acuminate leaves with large sheath. Upper glume 1-nerved. Stamens 2. Heads hemispherical, involucre.

Marshy coasts, uncommon. July-September.

**C. schœnoides** Lam. A small annual with simple or branched compressed stems, and glaucous acuminate leaves less broadly sheathed than the last. Heads ovoid-oblong, sheathed at base. Upper glume 2-nerved. Stamens 3.

Sandy, marshy places and ditches, uncommon. July-September.

#### PHLEUM L. CAT'S-TAIL GRASS.

Glumes compressed, keeled, parallel at midrib, truncate, with a terminal seta, or acute. Flower 1. Pale membranous; fertile glume 3-veined, blunt, not awned or with a minute central awn. The following species occur:

**P. arenarium** L., **P. tenue** Schrader, **P. asperum** Jacq., **P. Bæhmeri** Wibel, and **P. pratense** L. (Timothy Grass).

#### ALOPECURUS L. FOX-TAIL GRASS.

Glumes compressed, connate below, membranous, awnless. Flower 1. Pale o. Fertile glume scarios, 3-veined, awned on the back. The following occur: **A. agrestis** L., **A. pratensis** L. (Meadow Fox-tail), **A. bulbosus** L., and **A. geniculatus** L.

#### SESLERIA Scop.

Spikelets sessile, imbricate all round, 2-6 flowered in a dense ovoid head. Glumes nearly equalling the spikelet. Fertile glumes 2-3, keeled, membranous, with a scarios margin, ending in 3 or 5 points. Pale 2-keeled. Stamens 3.

**S. argentea** Savi. grows rarely in rocky places, and **S. cærulea** Ard. grows in arid, rocky places, as on Faron, Sainte-Baume, Châteaudouble, etc.

#### ECHINARIA Desf.

Spikelets sessile, in a spiny, globose head. Florets 1 or 2, the second generally barren. Fertile glume ending in several long rigid bristles. Head with a lacinate involucre.

**E. capitata** Desf. An erect annual, 4-12 in. high. Leaves short, very obtuse. Heads globular, dense, spiny. Spikelets subsessile, compressed

laterally, 2-4 flowered. Fertile glume of 5 unequal spreading spines, the upper pale 2-keeled and with 2 spreading spines. Stem erect, nearly naked.

Dry, sandy fields, uncommon; sometimes in cornfields, as at Plau d'Aups. May-June.

#### TRAGUS *Hall.*

Outer glumes scariose; inner one coriaceous and bristly. Spikelets scattered, 1-flowered, in a spike-like panicle.

**T. racemosus** *Hall.* = **Lappago racemosa** *Willd.* Annual, 3-12 in. high, hispid. Stems spreading or ascending, very leafy. Glumes horny at length. Bristles crooked. Spikelets 2-4, subsessile, united into a long raceme. Leaves with stiff cilia; ligule of soft hairs.

Sandy fields. June-October.

#### SETARIA *de Beauv.*

Spike compound, often cylindrical. Spikelets surrounded by an involucre of bristles, 2-flowered; inferior flower rudimentary. Glumes 2, lower 3-veined, upper many-veined. Sterile flower of 1 pale like the upper glume.

The following species occur: **S. glauca** *Beauv.*, **S. viridis** *Beauv.*, very common like the first, **S. ambigua** *Guss.*, very rare at Hyères in the crops, and **S. verticillata** *Beauv.*, rather rare, in cultivated fields.

#### PANICUM *L.*

Spikelets all fertile, scattered, in spikes, racemes, or panicles; barren floret 1 large, glume-like, embracing the horny, ribless pale. Fertile glume nerved. (Spikes fingered in *Digitaria*.)

**P. capillare** *L.* Panicle much branched, capillary, spreading. Flowers widely scattered. Outer glume ovate, acute; inner and barren florets acuminate, smooth. Sheaths hairy. Leaves soft, broad, hairy. An annual.

An American grass cultivated and naturalized here and there in sandy places near Nice, the Sablettes, and Toulon. Very rare. June-September.

**P. repens** *L.* occurs rarely on sea-sands near Hyères and Bormes.

**P. Crus-galli** *L.* is common. Spikelets paniced, 1-flowered. Stems stout. Leaves broad, flat, often waved. **P. miliaceum** *L.* (Millet) is cultivated for fowls, and occasionally seen naturalized.

#### DIGITARIA *Scop.*

Spikelets unilateral, on digitate spikes. Fertile glume not awned.

**D. sanguinalis** *Scop.* = **P. sanguinale** *L.* is very common in crops, and flowers from July-September. Leaves and sheaths hairy. Panicle digitate, often purplish, of 3-10 long spikes.

#### CYNODON *Rich.* DOG'S-TOOTH GRASS.

Spikes digitate, spreading. Spikelets 1-flowered, awnless, with a superior rudiment. Glumes nearly equal, patent. Fertile glume boat-shaped, compressed, 3-nerved, awnless. Styles long and distinct. Stigmas feathery.

**C. dactylon** *Pers.* A low prostrate grass, creeping and rooting to a great extent, and hence used now in many hot countries to form a sward. Panicle of 3-5 slender spikes, 1-1½ in. long. Outer glumes nearly equal, narrow and pointed. Flowering glume longer and broader, becoming hardened when in fruit.

Grassy and sandy places, borders of fields, etc., very common. June-September.

#### SPARTINA *Schreber.*

Spikes erect, one-sided, paniced. Spikelets 1-flowered, awnless. Glumes unequal; upper lanceolate. Fertile glume sessile, awnless, 1-nerved. Pale long, 2-nerved. Styles long, united half way. Stigmas feathery.





PLATE XXXI



*Arundo Donax* in flower in November : the tall reeds (roseaux) used for basket-making, fencing, etc.



*Agave americana* in fruit, on cliff at Beau-Rivage, Var, in winter. *Diploaxis erucoides* in foreground

**S. versicolor** *Fabre*. Plant 2-4½ ft. high, with long creeping rhizomes. Leaves very long, rush-like and revolute, at first purplish then green streaked with white. Spikes 3-5, the upper one long peduncled, the others subsessile. Upper glume half as long as the lower one, lanceolate-obtuse.

Damp, sandy places near the sea, rare. November-March but rarely flowering. It grows at the Vieux Salins, the Plage d'Hyères (sometimes under the Pines), on the Isthmus of Giens, near Fréjus, and at Cap Croisette near Cannes.

### ANDROPOGON L.

Spikelets in twos, sessile or stalked, linear-lanceolate. Spikes digitate, or in pairs or panicles. Fertile glume with a long, bent awn. Seed nearly linear. Plants mostly tall, and often hairy. Ligule reduced to hairs.

**A. distachyos** L. Spikes in pairs, terminal. Barren spikelets awned. Stem undivided. Plant 1-3 ft. high. Awn of fertile glume 2 cm. long. Hill-sides and stony places. May-November.

**A. Ischæum** L. Spikes 5-10, fan-like. Barren spikelet awnless. Fertile spikelet sessile, with nearly equal glumes, hairy, purplish. Plant 1-2½ ft. high. Awn of fertile glume only 10-15 mm.

Dry, stony places, borders of fields and slopes. May-October.

**A. hirtus** L. Spikes in pairs, paniced. Barren spikelets awnless. Upper part of stalk, common to a pair of spikes, with long hairs. Plant 2-4 ft. high, somewhat variable. Awn 2 cm. long.

Hill-sides and borders of fields, very common. April-November.

**A. pubescens** *Vis*. May be no more than a variety of the last with longer awn, longer spikes, and peduncles downy to the top, but not hispid. It grows with the other and is almost as common. April-November.

**A. gryllus** L. Spikes small, numerous, in long verticillate panicles. The whorled spreading branches are 3-flowered. Plant 2-3 ft. high.

Arid, uncultivated ground, uncommon. May-July.

### SORGHUM *Pers.*

Spikelets in twos or threes, sessile or stalked, oblong or rather ovoid. Glume of fertile flowers coriaceous, without striæ. Seed large, roundish.

**S. halepense** *Pers.* Panicle spreading; branches and rachis rough. Stalk of barren floret about half as long as the floret. Barren floret extending considerably beyond the fertile. Leaves and sheath smooth. Root creeping. Plant 2-6 ft. high.

Fields and damp places; introduced from the Orient, but long naturalized on the Riviera. June-September.

### SACCHARUM L.

Spikelets all fertile, in sets, one sessile and one or two stalked. Usually awnless. Fertile glume without hairs. Pale minute or wanting. The sugar-cane belongs to this genus.

**S. Ravennæ** L. occurs in marshes in the Var and flowers in September and October. It is 3-6 ft. high, with a silky white branched panicle.

**S. cylindricum** *Lamk.* = *Imperata cylindrica* *P.B.* Spike cylindrical, silky and silvery, but spotted with the purple styles. Leaves glabrous, narrow. Plant 2-3 ft. high.

Sands near the sea and rather damp places. Uncommon. June-August.

### ARUNDO L. CANE.

Spikelets pedicelled, 1-7 flowered, in a large branched panicle. Glumes membranous, equal or the outer larger. Inner glumes membranous, very unequal. Awn, if any, fine and slender.



**A. Donax L.** Canne de Provence (Plates III and XXXI). A tall bamboo-like reed, 6-16 ft. or more high, with thick creeping root-stock. Stems ligneous, averaging an inch thick. Leaves very broad. Ligule very short and briefly ciliate. Panicle very long (1-2 ft.), oblong and dense. Glumes nearly equal; inner one as long as the floret. Fertile glume trifold. Also called roseaux.

Damp, sandy places, sides of streams, etc., common on the littoral and often planted. September-November. Much used for baskets, fences, etc.

**A. Pliniana Turra.** Allied to the last, but less robust in all its parts. Leaves smaller with two shorter auricles at base. Panicle 1-1½ ft. long, stiff. Lower flowers-glume smooth, and tapering into a bristle.

Damp places on the littoral near Fréjus and St. Raphael. September-October.

#### PHRAGMITES Adans. REED.

Panicle diffuse. Glumes unequal, lower one much smaller. Flowers 1-6, awnless, with silky hairs at base, lower ones imperfect. Fertile glumes acuminate, upper one much longer than the lower. Pale very short.

**P. communis Trin.** Common Reed. A stout grass, 4-12 ft. high, with long creeping root-stock and numerous long leaves, often an inch broad. Panicle 4-18 in. long, much branched, purplish-brown. Spikelets very numerous, narrow. Outermost glume lanceolate, concave and empty.

Wet places, very common and somewhat variable. June-September.

A large variety (**P. gigantea Gay**) sometimes considered a species, is found at the Plage d'Hyères and at Porquerolles.

#### AMPELODESMOS Lk.

Spikelets many-flowered, lowermost usually perfect. Outer glume rather the smallest. Fertile glumes bifid. Seed crested. Panicle diffuse.

**A. tenax Lk.** grows very rarely in thickets among the Lentisk, Cistus and Calycotome near La Londe (Var) on the borders of the Pansard torrent.

#### AMMOPHILA Host.

Spikelets 1-flowered, scattered, with an inferior rudiment. Glumes nearly equal, membranous. Fertile glume rigid, 5-nerved, silky at base. Pale rigid, 2-nerved.

**A. arenaria Lk. = Psamma arenaria Beauv.** Sea Maram. Root-stock creeping, binding the shifting sands. Panicle cylindrical, thicker in the middle; straw coloured; glumes and pale linear-lanceolate acute. Stem erect, stiff, 2-3 ft. high. Leaves rigid, involute, acute, glaucous.

Sandy seashores. May-July.

#### CALAMAGROSTIS Adans. SMALL REED.

Panicle diffuse. Glumes nearly equal, lower rather longer. Flower 1, with silky hairs at its base. Fertile glume bifid, awned.

**C. argentea DC. = Lasiogrostis Calamagrostis Lk.** An elegant silvery grass, 2-3 ft. high, growing in dense masses, with long stiff involute leaves and leafy stems. Ligule short and truncate. Panicle long, branched, somewhat drooping, silvery and then fawn coloured.

Rocky screes and arid banks in the lower mountains. June-August.

**C. epigeios Roth.** grows rarely in rather damp, sandy places near Fréjus, St. Raphael, the Esterel, and Golfe Jouan.

#### AGROSTIS L. BENT GRASS.

Panicle loose. Glumes membranous, acute, unarmed; upper smaller. Flower 1, with hairs at its base, no rudiment. Fertile glume hyaline; dorsal awns shorter than glumes, or o. Spikelets very small.

The following occur:—

*A. pallida* DC., *A. elegans* Thore., *A. canina* L., *A. olivetorum* G. G., *A. vulgaris* With., and the var. *nigra* With., which the present writer found near Carqueiranne in April, 1913, apparently new to France. See "Journal of Botany" (1913), p. 196.

It is more robust, darker in colour, panicle more scabrid and more rigid, and the spikelets are larger.

*A. verticillata* Vill., and *A. alba* L. in many forms.

*A. Spica-venti* L. = *Apera Spica-venti* Beauv. rarely occurs in crops on sandy ground. It is a tall, slender, and very elegant annual grass.

#### SPOROBOLUS R. Br.

A genus hardly distinguishable from *Agrostis*, but with panicle usually less branched and more contracted.

*S. pungens* Kunth. A creeping grass, with long scaly rhizomes. Stems very leafy, branched from the base. Leaves short, stiff, spinous. Panicle short, often purplish. Lower glumes much shorter than upper.

Maritime sands. July-October. Perhaps this plant approaches the actual sea nearer than any other, and binds the sands with its creeping rhizomes.

#### GASTRIDIVM Beauv. NIT-GRASS.

Panicle close, spike-like. Glumes membranous, acute, awnless, ventricose at base, exceeding the flower. Fertile glume minute, truncate or toothed at end. Spikelets small, in a contracted panicle, 1-flowered.

*G. lendigerum* Gaud. occurs in crops and dry fields and *G. scabrum* Presl. more rarely in fields.

#### POLYPOGON Desf. BEARD-GRASS.

Panicle close, spike-like. Glumes scarious, each with a long bristle from just below the notched tip. Fertile glume usually awned from below the tip. Spikelets in a contracted or spike-like panicle, 1-flowered.

*P. maritimus* Willd. and *P. monspeliensis* Desf. are not uncommon in damp, sandy places near the coast; and *P. subspathaceus* Req. is very rare near Hyères and on the Isle of Porquerolles.

#### LAGURUS L. HARE'S-TAIL.

Panicle dense, ovoid. Glumes scarious, ending in a long fringed bristle. Flower 1, with a pedicel-like rudiment. Fertile glume ending in 2 short bristles and with a dorsal bent, twisted awn.

*L. ovatus* L. An erect slender annual, 4-18 in. high. Leaves covered with soft down, and with swollen sheaths. Spikelets 1-flowered, very numerous and crowded in an ovoid or oblong soft hairy head about an inch long. Outer glumes subulate or slightly dilated at base, and with long soft hairs; fertile glume much shorter, thin and cleft into 2 awn-like points.

Sandy places near the sea, common. May-June.

#### STIPA L. FEATHER-GRASS.

Spikelets stalked, 1-flowered, in a panicle. Fertile glume coriaceous, convolute, 5-nerved, hairy below, with a very long, bent awn usually twisted below.

*S. pennata* L. Awn twisted below, feathery above the upper knee, often a foot long. Glumes subulate with a long scarious point. Anthers hairless. Plant 1½-2½ ft. high.

Dry hills and stony slopes inland, but not ascending so high as in the central European Alps. Local, June-Aug.

*S. juncea* L. Awn hairy throughout, about 3 in. long. Upper part straight, much longer than the twisted portion. Glumes subulate. Anthers bearded.

Leaves all setaceous, filiform, and glaucous. Upper sheaths not enlarged. Plant same height as last.

Dry hill-sides and stony slopes. May-June.

**S. tortilis** Desf. A rather smaller annual species. Panicle more spike-like. Awn about  $4\frac{1}{2}$  in. long, lower part much twisted, armed with strong hairs. Inner glume villous. Sheaths broad, the upper generally embracing the base of panicle.

Dry rocky places, rare. April-May. La Garde, near Toulon, Villefranche, and Nice.

**S. Aristella** L. Plant 2-4 ft. high, glabrous. Leaves rolled in, setaceous, the upper one far from the panicle. Awn hispid, not twisted, twice as long as the acuminate glume. Florets sessile. Anthers hairless.

Dry rocky or stony places. May-June.

**S. tenacissima** Desf. This handsome grass, well known in Egypt, is found naturalized near the top of Mont Faron near Toulon (Reynier), and in May, 1913, a few large clumps  $4\frac{1}{2}$  ft. high were found by the writer on a limestone slope just above La Farlède (Var). It is known as Halfa Grass.

#### PIPTATHERUM P. Beauv.

Glumes membranous. Spikelets 1-flowered, in a loose panicle. Florets sessile. Fertile glume joined to a straight, terminal awn, hardening on the seed.

**P. multiflorum** P.B. Panicle many flowered, the branches being in whorls. Awn as long as glume. Fertile glume smooth. Leaves flat; ligule short, truncate, the upper one sometimes lacinate. Plant 2-3 ft. high, with erect, stiff stems.

Road-sides and fields, very common in most places on the littoral. May-October.

**P. cærulescens** P.B. Awn shorter than glume. Leaves narrower, setaceous, involute. All ligules long, lanceolate. Spikelets bluish.

Stony places in limestone hills. April-June.

**P. paradoxum** P.B. Panicle few flowered. Awn twice as long as glume. Fertile glume hairy. Leaves flat. Ligules short and truncate.

Limestone rocks and dry hill-sides. Rare. May-July. Faron.

#### AIRA L.

Panicle lax. Flowers 2. Fertile glume toothed or bifid at top, terete on the back. Awn dorsal, kneed (except in *A. cæspitosa*). Ovary glabrous. Fruit not crested. The following species occur: *A. Tenorii* Guss., *A. provincialis* Ford., *A. capillaris* Host., *A. cæspitosa* L., *A. flexuosa* L., *A. media* Gouan, *A. Cupaniana* Guss., *A. caryophyllea* L., *A. multiculmis* Dumort.

#### CORYNEPHORUS P. Beauv.

Spikelets paniced, 2-flowered. Awn straight, jointed in middle; upper portion clavate, a tuft of hairs at the junction. Tip of lower pale entire. The following occur: *C. canescens* P.B., only at les Sablettes near Toulon, *C. fasciculatus* Boiss. et Reut., and *C. articulatus* P.B., both on sandy places near the sea.

#### VENTENATA Kæler.

**Ventenata avenacea** Kæler. Grows in sandy waste ground near Collobrières and perhaps elsewhere in the Var. It is a glabrous annual, 1-2 ft. high, with the habit of an *Avena*, and very loose spreading panicle.

#### AVENA L. OAT.

Spikelets 2-5 flowered. Fertile glume entire or 2-toothed, long awned. Awn dorsal, kneed, and twisted. Ovary hairy at the top. Fruit crested and furrowed. The following may be found: *A. barbata* Brot., *A. fatua* L.,





*Pritchardia filamentosa* (*Washingtonia robusta*)  
at Hyères. Circumference 7 feet



*Phoenix canariensis* at Hyères in November



**A. sterilis** L., **A. setacea** Vill., **A. pubescens** L., **A. pratensis** L., and **A. bromoides** Gouan.

### TRISETUM Pers.

Spikelets crowded. Flowers 2-6. Fertile glume with faint lateral veins, ending in 2 acute teeth, awned. Awn dorsal, kneed, and twisted. Ovary glabrous. Fruit neither crested nor furrowed.

**T. flavescens** P.B. Yellow Oat. Panicle diffuse, yellowish. Glumes very unequal. Florets about 3, exceeding the calyx. Axis with a very short beard. Fertile glume 5-nerved. Root somewhat creeping.

Meadows and woods, common. June-July.

### ARRHENATHERUM P. Beauv. FALSE-OAT.

Flowers 2, with a rudiment; lower flower male with a long kneed and twisted awn from below its middle; upper with a short straight awn. Fertile glumes ending in 2 points. Ovary hairy at top. Fruit downy, not furrowed.

**A. elatius** Mert. et Koch is common in many districts. May-July.

### HOLCUS L.

Flowers 2; lower perfect, awnless (or rarely awned), upper usually male, with a dorsal awn. Fertile glumes 5-nerved, hardening on the fruit. Pale 3-toothed.

**H. lanatus** L. is very common. May-July.

**H. mollis** L. is rare in the district and grows usually in mountain woods. May-July.

### GAUDINIA P. Beauv.

Glumes unequal, much shorter than spikelet. Fertile glume with a long bent and twisted dorsal awn. Rachis brittle.

**G. fragilis** P.B. Culm branched. Sheaths and leaves downy, spikelet solitary, 5-7 flowered, smooth. In habit somewhat like a slender but hairy Rye-grass.

Meadows and grassy slopes near the sea. May-June.

The late M. Albert determined 3 varieties in the Var, which are figured and described in the "Cat. des Plantes Vasc. du Var," p. 540.

### SIEGLINGIA Bernh.

Flower 2-4. Fertile glume rather coriaceous, rounded on the back, bifid with an intermediate broad tooth. Nut free.

**S. decumbens** Bernh. = **Triodia decumbens** Beauv. = **Danthonia decumbens** DC. = **Festuca decumbens** L., grows in meadows and grassy places occasionally. June-July.

### KOELERIA Pers.

Fertile glume slightly keeled, acuminate, or with a straight terminal bristle. Glumes unequal; upper 2-3 ribbed. Spikelets compressed, 2-5 flowered, in a spike-like panicle. Nut free.

**K. phleoides** Pers. Annual, about a foot high. Panicle cylindrical; spikelets crowded on erect, branched, hairless stalks, 3-5 flowered. Fertile glume rough and somewhat hairy. Awn soft, hardly one-fourth as long as floret. Leaves flat, hairy. Stem hairless.

Sandy places near the sea. April-June.

**K. villosa** Pers. Annual, about a foot high. Panicle cylindrical, larger than the last. Spikelets crowded on short erect, hairy, branched stalks, 2-flowered, villous on back, acuminate, the second floret abortive in the lower spikelets. Leaves flat, soft, villous.

Sandy shores. May-June.



**K. valesiaca** *Gaud.* Allied to the last, but with stem hairy at the top and with glabrous spikelets. Glumes ciliate on keel. Pale acuminate. Lower leaves convolute-setaceous.

Dry hill-sides. April-June.

**K. cristata** *Pers.* grows in dry slopes, and the loose panicked **K. Michellii** *Coss.* (like a *Vulpia* in habit) in dry sandy woods.

#### GLYCERIA *R. Br.*

Glumes unequal, sub-membranous. Fertile glumes with 5-7 strong prominent ribs and a scarious margin, subcylindrical. Nut oblong, convex on back, furrowed within, free. Spikelets many flowered.

The following species occur, viz.: **G. convoluta** *Fries*, **G. tenuifolia** *Boiss. et Reut.*, **G. festucæformis** *Heyn.* (rare, near Toulon, Sanary, and Hyères), **G. distans** *Wahl.*, **G. fluitans** *R. Br.*, and **G. plicata** *Fries.*

#### CATABROSA *P. Beauv.*

Glumes unequal, very short, 1-veined. Fertile glumes cuneate and 3-toothed, at tip, membranous. Upper glume often with 2 short and faint lateral veins.

**C. aquatica** *P. Beauv.* = **Glyceria aquatica** *Presl.* This pale green, tender aquatic grass is recorded from La Seyne near Toulon. The stems are creeping or floating at the base, rooting at the nodes and often 2 or 3 ft. long, the flowering branches are erect, the panicle pyramidal. May-July.

#### POA *L.*

Glumes rather unequal. Fertile glume 3-5 veined, scarious at the tip, compressed, keeled. Nut elliptic trigonous, slightly furrowed within, free. The following occur in our district: **P. compressa** *L.*, **P. pratensis** *L.*, **P. Chaixii** *Vill.* (in mountain woods), **P. trivialis** *L.*, **P. nemoralis** *L.* (in mountain woods), **P. bulbosa** *L.* (very common), and **P. annua** *L.*

#### ERAGROSTIS *P. Beauv.*

Glumes much shorter than the spikelet. Inner and outer glumes similar, membranous, with 3 prominent converging nerves. Panicle spreading.

**E. major** *Host.* (**E. megastachya** *Lk.*). Panicle spreading, branches solitary or in pairs; lower hairy at base. Spikelets linear-oblong. Florets 15-35, obtuse, with a short point. Sheaths smooth. Seeds reticulate. Annual. Sandy cultivated ground. May-October.

**E. minor** *Host.* (**E. poæformis** *Lk.*). Panicle spreading, more delicate than the last, branches solitary or in pairs; lower ones hairy at base. Spikelets ovate-oblong. Florets 9-19. Sheaths hairy. Annual, about a foot high. Same places as the last but less common. May-October.

**E. pilosa** *P. Beauv.* Panicle contracted when in flower. Branches semi-verticillate; lower hairy at base. Spikelets linear. Florets 5-13, acute. Lateral nerves of outer pale rather indistinct. Sheaths smooth. Annual about a foot high.

Sandy fields in the Var. June-October.

#### MOLINIA *Schrank.*

Glumes unequal, without lateral ribs, falling short of the lanceolate spikelet of 2 or 3 semi-cylindrical flowers and a subulate rudiment. Pales 2-nerved, obtuse. Fertile glumes 3-nerved, very strong. Spikelets in a slender panicle.

**M. cærulea** *Mærch.* Purple Molinia. Panicle rather contracted, often purplish. Spikelets erect, awnless, about 3-flowered. Fertile glume 3-nerved, acute, hairless. Stems nearly naked, erect, stiff. Plant 1-3 ft. high, glabrous. Damp heaths and grassy places. June-October. Very variable.

**M. serotina** *Mert. et K.* Plant 1-3 ft. high, glabrous. Panicle spreading, with branches at right angles. Florets 2-5, somewhat awned. Fertile glume 5-nerved. Stem leafy and knotted.

Limestone hills and stony slopes. July-October.

#### MELICA L. MELICK.

Glumes nearly equal, with lateral ribs, nearly as long as the ovate spikelet of 1 or 2 flowers, rounded on the back and with a club-like rudiment. Fertile glumes 5-9 nerved, awnless.

**M. ciliata** *L.* Panicle regular, spike-like; branches erect. Fertile glume of lower floret ciliate on its whole length. Back rough, not hairy. Leaves flat. Stem tall, solitary. The two sub-species which occur in the Var are **M. nebrodensis** *Parl.* with a more slender, looser panicle, and **M. Magnolii** *G. G.*, a more robust plant with a longer interrupted panicle. They both occur on dry hill-sides and borders of fields. April-June. In **nebrodensis** the fertile glume of lower leaflet is ciliate for its whole length.

**M. Bauhini** *All.* Panicle simple, much less dense than in **ciliata**, lower branches spreading. Spikelets secund. Fertile glume of lower florets ciliate to above middle, not at top. Back scabrous.

Dry, rocky places. April-June.

**M. minuta** *L.* Fertile glume not bearded. Raceme sometimes simple, loose, finally whitish or violet. Spikelets beardless, with 2 complete florets. Glumes acute, falling short of the florets. Stem branched. Leaves very narrow, convolute. Ligule long. A very distinct species.

Limestone rocks and walls, local. April-June.

**M. major** *Sibth. et Sm.* is a sub-species of the last, with flat leaves, larger panicle and larger habit altogether.

Woods and arid slopes. April-June.

**M. uniflora** *Retz.* Wood Melick. Panicle branched, 1 sided; only 1 complete floret. Fertile glume not bearded. Plant 1-2 ft. high.

Woods in the hills and shady places. April-July.

#### BRIZA L. QUAKE-GRASS.

Glumes nearly equal, broad, 3-ribbed. Flowers 3-8, densely imbricate in a short distichous spikelet. Fertile glume boat-shaped, blunt, rounded on the back, with 7-9 faint veins. Glumes and pale membranous with a scarious margin. Nut free. Spikelets drooping.

**B. maxima** *L.* Panicle simple, drooping. Spikelets large, 9-17 flowered, drooping, oblong-ovate, silvery-white at first.

Sandy fields and waste ground in the littoral zone. May-June.

**B. media** *L.* Common Shaking Grass. Panicle compound, erect; spikelets small, suborbicular, 5-9 flowered, usually purplish. Ligule short, truncate. Meadows and pastures. May-July.

**B. minor** *L.* Annual. Panicle, very compressed, erect. Spikelets triangular cordate, small, 5-7 flowered, pale green. Ligule lanceolate acute, long.

Damp sandy fields, local. May-July.

#### SCLEROCHLOA P. Beauv.

Glumes unequal, membranous. Fertile glume with 5 faint veins, cylindrical below, often keeled at the tip, or with a very minute mucro. Nut oblong, convex on back, not furrowed within, free.

**S. maritima** *Lindl.* = **Poa maritima** *Huds.* Panicle contracted when in fruit. Spikelets linear, about 5-flowered. Outer glume 1-nerved; inner obscurely 3-nerved. Plant annual, rigid, with long barren runners and bent stems.

Salt marshes and sea-sands. May-June.

**S. hemipoa** *Parl.* Another stiff annual. Panicle with rough or scabrous branches, naked in lower half without axillary spikelets. Spikelets erect, spreading, the lateral ones subsessile. Ligule oblong, laciniate.

Sands near the sea, as e.g. the Plage de Giens, uncommon. May-June.

**S. rigida** *Lk.* = **Poa rigida** *L.* Panicle rigid, compressed. Spikelets in 2 rows, adpressed, linear, 5-11 flowered. Pale rather obtuse, with a minute point. Root fibrous. Plant annual, 3-9 in.

Old walls and sandy places. May-July.

**S. loliacea** *Woods.* Spike simple or somewhat branched at base, almost linear. Spikelets in 2 rows, erect, 8-12 flowered. Fertile glume subobtusely. Annual, 3-9 in. high.

Sands, walls, and rocks by the sea. May-June.

**S. dura** *P. Beauv.* is a rare species growing between Hyères and Toulon and on the Champs de Mars at Draguignon.

#### DACTYLIS *L.* COCK'S-FOOT.

Glumes unequal, herbaceous, mucronate; lower smaller. Fertile glume compressed, keeled, 5-veined; dorsal vein fringed and excurrent just below the tip. Spikelets crowded, subsecund, 3-4 flowered. Nut free.

**D. glomerata** *L.* Clustered Cock's-foot. Branches distant, naked at base. Spikelets crowded, 3-6 flowered. Leaves keeled.

Meadows, etc. Common. April-July.

Var. **hispanica** *Roth.* Panicle almost crowded into a small single head. Spikelets 3-flowered. A small stiff form usually growing on rocky places near the sea. Uncommon.

**D. littoralis** *Willd.* = **Poa littoralis** *Parl.* A stoloniferous plant with creeping and often rooting stems and glaucous leaves. Ligule furnished with a crown of hairs. Panicle spike-like. Spikelets 5-11 flowered.

Grassy places near the sea, rather rare. May-July.

#### CYNOSURUS *L.* DOG'S-TAIL GRASS.

Glumes nearly equal, scarious, much keeled. Spikelets dimorphous. Fertile glume rounded on the back with a terminal bristle. Each spikelet with a comb-like bract at its base. Panicle spike-like, 1-sided. Nut closely coated with the pales.

**C. echinatus** *L.* Raceme contracted, close, ovate, but one-sided; awns about as long as pales. Bract comb-like with long points. Stem erect, 1-2 ft. high. Annual.

Sandy fields and dry hill-sides, common. April-June.

**C. cristatus** *L.*, **C. elegans** *Desf.*, and **C. aureus** *L.* also occur. **C. aureus** *L.* = **Lamarckia aurea** *Mærch.*, is a pretty somewhat golden grass, with glumes remote from lower floret. and pale of neutral floret very blunt. It is occasionally seen in stony places and on roads near the towns as at Villefranche. April-June.

#### VULPIA *Gmel.*

Spikelets spreading like a fan, with distant flowers. Glumes very unequal, long awned; lower one absent or at least half the length of the upper. Plants nearly always annual, sometimes hairy. Allied to **Festuca**. The following occur: **V. uniglumis** *Dum.*, **V. ciliata** *Lk.*, **V. Myuros** *Gmel.*, **V. sciuroides** *Gmel.*, **V. ligustica** *Lk.*, **V. sicula** *Lk.* (very rare, near Hyères, Toulon, and Fréjus), and **V. Michellii** *Rchb.* (near Menton and Golfe Jouan).

#### FESTUCA *L.* FESCUE.

Glumes unequal, herbaceous, many flowered. Fertile glume rounded on the back, very acute, or with the dorsal vein excurrent like a short awn.



Pale minutely ciliate on the ribs. Styles terminal. Nut furrowed, adhering to the pale. Sheaths of the leaves divided to the base. The following and perhaps others occur: *F. pratensis* Huds., *F. Fenas* Lagasca, *F. spadicea* L. (on mountain and Alpine pastures), *F. rubra* L. (very variable), *F. heterophylla* Lamk. (in mountain woods), *F. ovina* L., and *F. duriuscula* L.

### BROMUS L. BROME.

Spikelets paniced or racemed, many flowered; lower 1-veined, upper 3-5 veined. Flower lanceolate, compressed. Fertile glume with a long awn. Styles below top of ovary. Nut furrowed, adhering to the pales. Sheaths of leaves divided half way down. The following species occur, some of them being very pretty grasses: *B. erectus* Huds. = *B. ramosus* Huds., *B. asper* Murr., *B. tectorum* L., *B. sterilis* L., *B. maximus* Desf., *B. rubens* L., *B. madritensis* L. (very common), *B. secalinus* L., *B. arvensis* L., and *B. patulus* Mert. et K. (these three rare, in fields), *B. commutatus* Schrad., *B. mollis* L., *B. molliformis* Lloyd, *B. intermedius* Guss., *B. machrostachys* Desf., and *B. squarrosus* L. The nine last species are now usually put in the genus *Serrafalcus* Parl.

### HORDEUM L. BARLEY.

Spikelets in threes, sessile, often partially barren. Glumes 2, ending in long bristles; 1 perfect flower and a stalk-like rudiment. *H. murinum* L., *H. marinum* Huds. (= *H. maritimum* With.), *H. secalinum* Schreb., and *H. bulbosum* L. may be found.

### ELYMUS L. LYME-GRASS.

Spikelets 2 or 3 together, sessile. Glumes 2, both on the same side of the spikelet, without awns or bristles, with 2 or more perfect flowers.

*E. Caput Medusæ* L. occurs sometimes in sandy places; and *E. europæus* L. in mountain woods.

### ÆGILOPS L.

Spikelets 2-4 flowered, of which 1 or 2 at the top are rudimentary. Glumes placed rather obliquely; these and the fertile glumes herbaceous, turgid, ending in several stout bristles. All annual.

*Æ. ovata* L. Spike ovoid. Spikelets 3-5. Glumes with 4 or 5 awns. Awns sharp and rough from the base, nearly equal. Fertile glume 2-3 awned. Borders of fields and roads and waste places, very common. May-June.

*Æ. macrochæta* Shuttle. et Huet. A rather larger species than the last, with more oblong spike and 2-3 spikelets. Awns rough from the base. A rudimentary spikelet at base of the spike.

Road-sides and stony slopes of hills in the Var. May-June.

*Æ. triaristata* Willd. Spike cylindrical, narrowed at top. Spikelets about 4. Glumes with 3 awns nearly equal and without prickles at base. Fertile glume with 1 or 2 short awns.

Borders of fields and roads in the littoral. May-July.

*Æ. triuncialis* L. Spike cylindrical, 4-6 flowered. Lower glume with 2, upper with 3 awns. Awns of terminal spikelets much longer than the others. Fertile glume with 1 or 2 short awns.

Same localities as the last, but much commoner. May-July.

### TRITICUM L.

Spikelets solitary, sessile, many flowered. Glumes 2, opposite, nearly equal, their edges towards the rachis. Pale minutely ciliate on the ribs. The following species occur: *T. caninum* L., *T. repens* L., *T. pungens* Pers., *T. acutum* DC. (sea-sands), *T. junceum* L. (sea-sands), *T. littorale* Host., and two or three others.

**BRACHYPODIUM** *P. Beauv.* FALSE-BROME.

Spikelets subsessile, many flowered. Glumes opposite, unequal. Pale coarsely fringed on the ribs. Distinguished from *Triticum* by the unequal glumes.

**B. pinnatum** *Beauv.* Heath False-Brome. Spike erect; spikelets 6-15. Awns of upper flowers shorter than the glume. Leaves flat, rigid; root creeping. Ligules short, truncate.

Borders of fields, dry woods, and arid places, common. June-August.

**B. sylvaticum** *R. and S.* Slender False-Brome. Spike drooping. Spikelets 6-13. Awns of upper florets longer than the glume. Leaves flat, flaccid, ciliate; root fibrous. Ligules short, blunt, torn.

Shady places, woods, and borders of streams, common. June-August.

**B. distachyon** *P. Beauv.*, **P. phœnicoides** *R. and S.*, and **B. ramosum** *R. and S.* are also common in many places.

**LOLIUM** *L.* RYE-GRASS.

Spikelets solitary, edgewise on the rachis. Glume solitary, bract-like, or the one next the rachis very small, with 3 or more flowers.

**L. temulentum** *L.*, **L. rigidum**, **L. perenne**, and **L. mutiflorum**, are fairly common; while **L. italicum** *A. Br.* is rare.

**NARDURUS** *Reichb.*

A small genus closely allied to *Triticum*, comprises two species found in dry, sandy places on or near the littoral, viz. **N. unilateralis** *Boiss.* and **N. Lachenalii** *Godr.*

**LEPTURUS** *R. Br.*

Spikelets solitary, alternately imbedded on opposite sides of the rachis. Glumes 1-2, on the same side of the spikelet, cartilaginous, covering the one flower and superior rudiment. Pales scarious. Stigmas feathery.

**L. cylindricus** *Trin.* Spike subulate-cylindric, erect. Glume single, ensiform, acuminate, adpressed, 1-flowered, awnless. Annual.

Fields, road-sides, and sea-sands. April-June.

**L. incurvatus** *Trin.* Spike tapering, erect or incurved. Floret 1, with a minute rudiment, awnless. Leaves flat, short. Annual, decumbent.

Sea-sands and grassy places, near. April-July.

**L. filiformis** *Trin.* A sub-species of the last, with subcompressed, very slender and less curved spike. Stems often filiform. Leaves very narrow.

Sandy places near the sea. May-July.

**PSILURUS** *Trin.*

Outer glumes 1 or 2, minute. Spikelets 1-flowered, imbedded in the rachis. Fertile glumes with a terminal seta.

**P. nardoides** *Trin.* is a slender annual, with long and extremely slender curved spike. Spikelets distant, sessile, solitary and hidden in the rachis, linear with 1-2 aristate flowers. Glume 1, very minute, ovate-acute. Stamens 1.

Dry hills and arid places. April-June.

**NARDUS** *L.*

Spikelets 1-flowered, in 2 rows on one side of the rachis. Empty glume 0. Style 1, short. Stigma long. Fertile glume keeled, tapering to a subulate point.

**Nardus stricta** *L.* Mat-grass. A small tufted grass, 6-12 in. high. Stems and leaves erect, slender, rigid. Leaves bristle-like. Spike one-sided, slender. Fertile glume with a short rough awn, coriaceous, often purplish; pale membranous. Stamens 3.

Dry hills and mountain pastures, occasionally. May-July.

## GYMNOSPERMÆ.

## CONIFERÆ.

Tribe I. ABIETINÆ. Plants monœcious. Cones usually large, conical; scales more or less woody. Pollen curved. Trees with needle-shaped or subulate fascicled leaves.

Cone woody, scales persistent.....PINUS.  
 Characters as in Pinus, but leaves solitary and evergreen.....ABIES.  
 Leaves fascicled, deciduous. Seeds winged.....LARIX.

Tribe II. CUPRESSINÆ. Plants mono-dicœcious. Cones usually globose or short; scales woody or fleshy, persistent.

Cone fleshy, globose; scales at length connate.....JUNIPERUS.

Tribe III. TAXINÆ. Flowers dicœcious. Cones much reduced, scales small, thin or coriaceous, the upper with 1 ovule. Seed hard, with a fleshy coat, or sealed in a fleshy cup.

Seed solitary, seated in a fleshy cup.....TAXUS.

## PINUS L. PINE.

**P. silvestris** L. Scots Pine. Needles in pairs, stiffly subulate, about 2 in. long (5-7 cms.), glaucous inside. Cones very shortly stalked, recurved when young, symmetrical, conical. Scales rhomboid, with flat boss and a transverse keel and deciduous point. Seeds winged, small. Heart-wood reddish.

Mountain woods. May-June. Common in the Maritime Alps, a few trees descending to Menton; and occasionally in the hill country of the Var, especially in the N. of the Department.

**P. pinea** L. Pin Parasol, Stone Pine (Plate III). Needles in pairs, rather stiff, 8-15 cms. long, shorter and a deeper green colour than those of **P. maritima**. Cones very large, ovate obtuse or subglobular, reddish-brown, shining, sessile, shorter and rounder than those of the Maritime Pine. Scales large, rhomboidal. Seeds very large (16-20 mm.), edible. Male cone oblong, yellowish, 1 cm. long. A tree often in the shape of an umbrella.

Here and there on the littoral, and often planted. May-June. Fine specimens and characteristic woods can be seen on the coast near Hyères. Small forests also near Cannes and in the Esterel.

**P. halepensis** Mill. (Plate III). Aleppo Pine. Needles in pairs (or rarely 3-5), narrow filiform, 7-10 cms. long, soft, smooth, bright green; shorter, weaker and lighter green than in **P. maritima**. Cones oblong-conical, acute, 8-12 cm. long, reddish-brown, shining, on a very thick peduncle; scales feebly bossed. Seeds about 7 mm. with wing 4 times its length. Male cone oblong, reddish, small, 6-7 mm. long. A fairly large tree with bark at first silvery-grey.

Woods and stony hill-sides and on the extreme coast line; especially on limestone. April-May. Very fine specimens with large horizontal branches can be seen on the coast about Carqueiranne.

**P. pinaster** Solander = **P. maritima** Poir. (Plates II and XXVI). Maritime Pine. Needles in pairs, stiff, thick, 10-20 cm. (up to 8 in.) long, dark green. Cones larger than in **halepensis**, oblong-conical-acute, 12-18 cm. long, dark red and shining, sessile. Scales with prominent bosses, lacquered. Seeds 8-10 mm., black and shining on one side, with wing 4-5 times as long. Male cone ovate, yellowish, 1 cm. long. A tall tree, with frequently pyramidal top and rough reddish bark. Usually taller than the last, to which it is closely allied.

Very common in woods in the Maures region (Var), especially characteristic of siliceous soils. April-May. It also forms rapidly disappearing forests on several places between Menton and the Esterel.

## ABIES Mill. FIR.

**A. pectinata** DC. = **A. alba** Mill. = **Pinus Picea** L. Leaves pectinate, 2-5 cms. long, with 2 white lines beneath, disposed all round the fruiting twigs at the top. Cone cylindrical, reddish-violet first, then green, erect; shorter than



in *A. excelsa* (8-10 cm.), with prominent bracts. Scales dentate, shortly petioled, and falling with the seeds. Heart-wood light grey. A tree with horizontal branches and erect shoots.

Mountain woods in the north of the Var and in the Maritime Alps, a few descending to the neighbourhood of Menton. April-May.

*A. excelsa* Poir. = *Picea excelsa* Lk. Spruce Fir. Leaves mucronate, somewhat 4-edged, green, disposed equally all round the twigs. Cone cylindrical (10-15 cm.) pendulous, without bracts. Scales dentate, sessile and persistent. Heart-wood brown.

A tree with horizontal branches and pendent shoots, found in the Maritime Alps where it scarcely descends below 800 m. May.

#### LARIX Mill.

*Larix decidua* Mill. The Larch is abundant in the Maritime Alps, but rarely descends below 1200 m.

#### JUNIPERUS L. JUNIPER.

*J. communis* L. Common Juniper. A much-branched evergreen shrub. Leaves in whorls of 3, linear, acicular, 10-15 mm. long, ending in a prickly point, green above, glaucous beneath. Catkins very minute. Berries globular, purplish-blue, as large as bilberries when ripe, the second year.

Dry hill-sides and mountain woods. March-May.

*J. Oxycedrus* L. A branched prickly shrub, 3-20 ft. high. Leaves linear, sharp pointed, spreading, whorled in threes; with 2 glaucous lines above. Fruit globular, reddish and shining when ripe, rather large (8-10 mm.).

Hill-sides and woods, very common in the littoral region. March-May.

*J. phœnicea* L. A shrub or small tree, 3-20 ft. high, with brownish-red bark. Leaves very minute, oval rhomboidal, imbricate and in the form of little scales covering the stems and branches. Flowers usually monœcious. Fruit red and shining when ripe, globular, large (6-10 mm.), erect, with firm fibrous flesh. Seeds small and angular.

Rocks and hill-sides throughout the littoral district. February-April. On the coast near Hotel Beau Rivage, Carqueiranne, there is a large specimen with a trunk about 3 ft. in circumference (see Plate III).

#### CUPRESSUS L.

*Cupressus sempervirens* L. Cypress is often cultivated in the Riviera and the tall dark trees form a characteristic feature in the landscape, as e.g. about Hyères where it is sometimes spontaneous. It is a native of Eastern Europe and Western Asia.

#### TAXUS L.

*Taxus baccata* L. Yew. Damp mountain woods, uncommon. Fine specimens can be seen in the Forest of Sainte-Baume and elsewhere in the Var, but it is rare in the Maritime Alps. March-April.

The curious *Ephedra distachya* L., belonging to *Gnetaceæ*, does not appear to grow nearer our district than the Dept. of the Bouches-du-Rhône.

#### VASCULAR CRYPTOGRAMS.

The following are the ferns and fern allies which occur within the area treated in this work:—

#### ISOËTACEÆ.

These plants (Quillworts) were formerly placed in the next family.

*Isoetes velata* A. Br. Damp places near St. Raphael and Le Muy (Var). May-July.

*I. adpersa* A. Br. Borders of pools and land flooded in winter; very rare, and possibly now extinct. Near St. Raphael and Fréjus. April-June.

**I. setacea** *Delile*. Borders of dried up pools, very rare. Near St. Raphael, and Bellevue near Fréjus. April-July.

**I. Duriei** *Bory*. Sandy places and waste ground. February-May.

**I. Hystrix** *Durieu*. Sandy places near Cannes, Almanarre, Roquebrune, Lavandou, etc. March-June.

## SELAGINELLACEÆ.

**Selaginella denticulata** *Lk.* Common on banks, old walls, damp rocks and ravines. February-June. It extends to the lower mountains.

**S. helvetica** *Lk.* In the Maritime Alps, descending to St. Martin Vésubie. June-August.

## LYCOPODIACEÆ.

**Lycopodium Chamæcyparissus** *A. Br.* Gathered by Panizzi among the heather at San Romolo above San Remo in 1874.

**L. clavatum** *L.* Only in the Maritime Alps, and probably not within our limits. I gathered it above Limone, N. of the Col di Tenda on 3 July, 1907.

## EQUISETACEÆ.

**Equisetum maximum** *Lam.* Borders of streams, and damp, shady places. March-May.

**E. arvense** *L.* Fields and damp places, common. March-May.

**E. ramosissimum** *Desf.* Fields and damp, sandy places. May-August.

**E. variegatum** *Schleicher*. Damp, sandy places by streams, near Fréjus and Hyères. June-September.

**E. palustre** *L.* Damp places, uncommon. By R. Var and le Bar near Nice. Near mouth of the Nervia. May-August.

**E. hyemale** *L.* Damp places in the Maritime Alps, rare.

## OPHIOGLOSSACEÆ.

**Ophioglossum vulgatum** *L.* Adder's-tongue. Meadows and damp places, rare. May-July. La Seyne, Castigneaux, Roquebrune, near Ventimiglia, etc.

**O. lusitanicum** *L.* Hill-sides and sandy, grassy places, rare. December-March. Hills near Hyères, les Vieux Salins near Fréjus, and Cap d'Antibes.

**Botrychium Lunaria** *Swartz*. Here and there in the Maritime Alps. May-July.

## OSMUNDACEÆ.

**Osmunda regalis** *L.* Royal Fern. Damp woods and river-sides, rare. May-July. Esterel, near Collobrières, Vallon de Mourrefrey, near Cogolin, la Napoule, etc.

## POLYPODIACEÆ.

**Ceterach officinarum** *Willd.* Rocks and old walls, common. April-October.

**Notochlæna Marantæ** *R. Br.* Rocks and sides of ravines. April-July. Esterel, Antibes, Fréjus, Le Luc, Les Maures, La Garde-Freinel.

**Grammitis leptophylla** *Swartz*. Old walls, damp rocks, and moist banks, in many places. February-June.

**Polypodium vulgare** *L.* Common Polypody. Old walls, rocks, and shady banks, fairly common. Var. **serratum** *G. G.* Hyères, Esterel, Nans, Ampus, etc. Var. **cambricum** *G. G.* Plan du Pont (Huet), Montrieux (H.S.T.).

**P. Robertianum** Hoffm. = **P. calcareum** Sm. Limestone Polypody. Rocks in the north of the Var, rare, above Grasse, above Menton and elsewhere in the lower Maritime Alps.

**P. Phegopteris** L. Beech Fern, and **P. Dryopteris** L. Oak Fern, rarely descend to 2000 m. in the Maritime Alps.

**Aspidium aculeatam** Swartz. Prickly Shield Fern. Woods and damp, shady places.

**A. Braunii** Spenner. Damp woods and ravines in the lower mountains, rare. Esterel, near Menton, Nice, and Roquebrune.

**A. Filix-mas** Swartz. Male Fern. Woods and damp places in the lower mountains. Rather rare in the Var.

**A. rigidum** Swartz. Stony places in the mountains, rare.

**A. spinulosum** Doell. Damp woods and shady places, near Garde-Freinet, and in the lower Maritime Alps.

**Cystopteris fragilis** Bernh. Woods and shady ravines in the mountain region, very local.

**Athyrium Filix-femina** Roth. Lady Fern. Damp woods and shady places in the lower mountains and extending higher.

**Asplenium Adiantum-nigrum** L. Black Spleenwort. Shady places, damp rocks and woods, common.

**A. Ruta-muraria** L. Wall Rue. Old walls and rocks, common, especially on limestone.

**A. fontanum** Bernh. = **A. Halleri** var. **pedicularifolium** K. Limestone rocks in the hills and lower mountains.

**A. lanceolatum** Huds. Shady rocks and old walls, very local.

**A. marinum** L. Sea Spleenwort. Maritime rocks, very rare. Pointe des Mèdes at Porquerolles and Île du Levant.

**A. Petrarchæ** DC. Limestone rocks, very rare. Between Menton and Antibes, S. of Faron and Ollioules in the Var. This is like a small glandular **A. Trichomanes**.

**A. Trichomanes** L. Common Spleenwort. Old walls, wells, and shady rocks, very common.

**A. viride** Huds. Green Spleenwort. Hardly descends to within our district.

**A. septentrionale** L. Shady rocks. Rare in the hills, but commoner in the Maritime Alps.

**Scolopendrium vulgare** Sm. = **Phyllitis Scolopendrium** Newman. Hart's-tongue. Damp, shady places in the hills; not common.

**S. Hermionitis** Sw. Maritime rocks, very rare, between Monaco and Eze and at Antibes. Frond at first ovate-cordate, then broadly lanceolate-hastate.

**Blechnum spicant** With. Hard Fern. Damp mountain woods. Rare. Les Maures, between Agay and la Napoule, Mont de la Verne near Collobrières, and possibly in the Valley of Madeleine near Nice. Near S. Romolo.

**Pterisaquilina** L. Brake Fern. Damp, sandy places and woods, very common.

**P. cretica** L. Shady rocks and banks of streams, very rare in les Alpes-Marit. and Liguria, Vallon-obscur, Vallon de Douareon, la Giandola, near Pigna.

**Adiantum Capillus-Veneris** L. Maiden-hair Fern. Damp places, on road-side walls by which streams flow, etc. Common in many places on the Riviera, from the coast to the lower mountains.

**Cheilanthes odora** Swartz. Dry rocks and old walls, uncommon. January-June. Hyères town, Coudon on limestone cliffs at about 600 metres, Ollioules, Porquerolles, Mont Faron, Forêt du Dom, Bormes, Grasse, Roquebrune, between Monaco and Eze, near Pigna, etc.



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