Essential Oils In South Africa

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THE Union of South Africa, until recently, has received the attention of essential oil producers of the world almost exclusively as a market for their products. Native plants yielding essential oils, except buchu, were not exploited to any extent and the possibilities of successful cultivation of aromatic botanicals was a matter of small concern. The last five years, however, have witnessed a growing interest in essential oil plants among governmental agricultural agencies and private planters and prospects of developing substantial local distillation of essential oils from citrus fruits and acclimated floral botanicals seem promising at present.

Buchu Leaves—The buchu leaves of commerce are obtained from wild growths of species of "Barosma," a genius of the natural family Rutaceae, found principally in the western part of the Cape Province in the districts of Clanwilliam, Calvinia, Worcester, and Swellendam. Although there are at least sixteen species of "Barosma" which possess the fragrant glandular leaves characteristic of this plant group, standard buchus of commerce are mainly derived from three varieties; Barosma betulina (known as "rounds"), B. crenulata (known as "ovals" and "shortbroads"), and B. Serratifolia (known as "longs"). Cultivation of buchu has so far been undertaken on an experimental scale but planting trials by individual farmers and official agricultural agencies have indicated the possibilities of commercial planting of this shrub.

	Pounds	Value—U. S. Currency
1921	124,842	$ 93,309
1922	124,046	76,608
1923	204,297	129,213
1924	152,657	87,310
1925	198,691	79,966
1926	186,589	42,967

Harvesting and Collection of Buchu Leaves—Buchu leaves are customarily harvested during January, February, and March. Formerly, the rather haphazard harvesting methods employed resulted in the uprooting or cutting down of the shrubs. The more modern method of exploitation provides for the clipping of the branches, followed by drying in a cool shady spot. The branches are frequently turned until the leaves are sufficiently dry to be easily removed from stems. Careful handling in curing the leaves is required to produce the highest quality product. Late harvesting or overdrying produces an inferior leaf of yellowish color and low oil constituency.

Production of Buchu Leaves in South Africa—Most of the established producing areas are privately owned and in some cases are included within native reserves. Accurate estimates of production in these sections are naturally difficult to obtain. Definite figures are available only for the relatively small quantities harvested from Crown forest lands. Activity in those areas are controlled by the Government, permission to exploit being granted on an annual tender bid basis. Customarily, production from Crown lands comprises only about 15 to 20 per cent of the total output of the Union. In view of the relatively small domestic consumption export statistics appear to be the most accurate index of total production.

Export of Buchu Leaves—These leaves have been a product of South African commerce for many years, the peak shipment of 400,000 pounds being recorded as early as 1873. Export statistics showing the quantity and value of shipments during the last ten years are presented in the table below:

	Pounds	Value—U. S. Currency
1927	139,444	$ 29,359
1928	203,350	39,648
1929	220,669	38,684
1930	157,919	24,879
1931	197,426	26,622

The bulk of buchu leaf exports is destined to the United States, with significant quantities to the United Kingdom and Germany. It is un-

derstood that a share of the trade with the United Kingdom is transhipped to the United States.

Use of Buchu Leaves—Valuable Essential Oil Content—Buchu was originally discovered and used by the Hottentot natives. The early Dutch colonists soon learned of its medicinal efficacy and it rapidly became one of their most important remedies. The medicinal value of buchu depends largely upon its volatile oil content. Dried buchu leaves shipped to foreign countries are customarily converted into a powdered extract or employed for the distillation of buchu leaf oil. This oil, which possesses a peppermint-like odor, is used in medicinal preparations for the treatment of acute and chronic cystitis, urethritis and nephritis, acting mainly as a diuretic and mild antiseptic. Barosma camphor or diosphenol, which constitutes about 20 to 30 per cent of B. betulina and occurs to a lesser degree in other species, is a characteristic constituent of buchu leaf oil.

Possibilities of Local Distillation—The storage of buchu at the point of shipment and its passage through the tropics has resulted in some deterioration and the loss of a portion of its essential oil content. Local distillation in South Africa on a cooperative basis has been suggested as a possible solution of this problem, but the success of such a venture would probably depend principally upon scientific cultivation, harvesting, and curing of the buchu leaves or the handling of a large share of the annual collections. The lack of concentrated wild growths and the variety of species would militate against such distillation development at present.

Orange Oil Industry Initiated in South Africa—Citrus fruit cultivation in South Africa has shown remarkable expansion during the last ten years. The increased production, particularly of oranges, and the demand in overseas markets for only high quality graded fruit brought to the attention of South African growers the necessity for profitable utilizing cull or nonexportable portions of the crop. Experiments in the production of sweet orange oil conducted since 1929 tended to demonstrate the favorable prospects of commercial distillation activity.

The large orange crop cull and surplus fruit in 1930, amounting to nearly 30,000 tons of fruit in the Transvaal alone, prompted definite efforts to establish a local industry. Recent reports have indicated beginning or orange oil manufacture on a commercial scale and the development of perfume production in the Union of South Africa specifically to utilize the locally produced orange distillate. Exhaustive research relative to distillation procedure and oil yields has been conducted and manufacture of orange oil in South Africa apparently has been initiated with improved processes and methods worthy of the attention of American citrus products interests.

Experiments in the Production of Orange Petal Oil and Orange Flower Water.—Production of orange petal oil and orange flower water from the blossoms of sweet orange trees appears to be a possible future essential oil activity in South Africa. Nearly 90 per cent of the orange blossoms produced annually is not needed for fruit crop and therefore is wasted. Preliminary experiments conducted during the last two years on the Zebediela Citrus Estate in the distillation of orange flower derivatives have shown promising results. Costly methods of collection and distillation and relatively low yields are at present the principal barriers to commercial development. These problems are receiving the attention of chemists and technicians in the Union and it is considered likely that eventually profitable methods can be evolved.

Lavender Cultivation Development Promising.—Lavender cultivation and distillation has shown recent promise in South Africa. Since 1923, the National Botanical Gardens at Kirstenbosch near Cape Town has conducted experiments in growing lavender. Success in these efforts to adapt this floral crop to South African conditions was not achieved until 1930, early difficulties being attributed to the inferior types of plants originally set out. Better varieties secured since 1929 from Kew Gardens and from France have shown favorable growth at the Gardens. Samples of oil distilled from South African lavender were found to have physical constants similar to those of French lavender oil and favorable prospects of commercial sale were anticipated by experts at the Imperial Institute. A small lavender plantation is doing well at Piquetberg and numerous experimental plots have been set out during the last two

years in other sections of the Union. However, crops have not been large enough as yet to warrant other than trial distillation of the oil.

Eucalyptus Oil Distillation and Future Prospects.—Eucalyptus trees are quite abundant throughout South Africa, over 200,000 acres of these trees being reported on plantations of the Union alone. Southern Rhodesia also possesses large tracts of this oil yielding tree. Scattered information indicates that there are at least ten species which have been planted in appreciable numbers. Although there is only one eucalyptus oil distillery known to be in operation in the Union, equipment was improved and plant enlarged in 1928 to take care of local demand. Interest in developing export markets for South African eucalyptus oils in the future resulted in the distillation of samples of mature leaves and terminal twigs of a number of local occurring species of Eucalyptus, in 1930, and transmittal of crude oil distillates to the Imperial Institute for examination and market appraisal. Oils of *Eucalyptus globulus; E. maideni* and *E. sideroxylon* from South Africa were of satisfactory quality but the present slow market for medicinal eucalyptus oils would not tend to encourage large scale distillation of these species for export. Eucalyptus dives examined was found to have a low piperitone content and therefore would probably find use only for mineral separation purposes. *Ed. staigeriana* samples showed the presence of about 50 per cent of limonene and 30 per cent of citral. A market for this South African oil might be found as a cheap substitute for lemon oil in flavoring confectionery or as a source of citral. *E. citriodora* from South Africa was of good quality and contained a high percentage of citronellal. Fair prospects therefore are visualized for the development in the future of a South African export trade in eucalyptus oils.

Pennyroyal Oil Possibilities Not Encouraging at Present.—The pennyroyal plant (*Mentha Pulegium*) grows very abundantly in Cape Province. Since 1927, experiments and analyses have been made by the Imperial Institute and other agencies to ascertain the quality and commercial value of oil distilled from South African pennyroyal. It was concluded that although samples examined were of good quality and contained a high percentage of pulegome, pennyroyal oil distillation on a commercial scale would not prove profitable at present in view of existing stocks of the oil in world markets and an inactive demand.

Interest in Geranium Cultivation—Favorable Report on the South African Oil.—Most of the *Pelargonium* species are natives of the dry rocky slopes of South Africa. During the last four years, investigations of the possibilities of regular cultivation of the species yielding geranium oil have been carried on by the Department of Agriculture of the Union. Samples of geranium oil were distilled by government chemists at Kirstenbosch in 1930 and submitted to the Imperial Institute for analysis. The physical constants of the oil resembled those of the Algerian geranium oil although the odor was somewhat different. Institute experts recommended more extended cultivation and distillation in South Africa and the export of a trial shipment to the United Kingdom.

Miscellaneous Essential Oil Botanicals.—Experimentation in the acclimation of a number of essential oil plants from other regions in the Union of South Africa has been rather active during recent years as well as investigations of the essential oil possibilities of native plants and aromatic materials. *Rosmarinus officinalis* (Rosemary) has been grown with good results at the National Botanic Gardens at Kirstenbosch. Oil distilled from cultivated rosemary was found to be fairly comparable with Spanish rosemary oil and might find a fairly good export sale if sufficient of the plant material could be produced to warrant commercial distillation. *Artemesia Afra. N. O.,* an indigenous South African shrub, the leaves of which have been employed by the Kaffir doctors for the preparation of an extract used for minor ailments of the chest and stomach has received some attention during the last two years.

South African Market for Imported Essential Oils.—The Union of South Africa offers a rather substantial market for imported essential oils, purchases of these commodities from foreign countries aggregating between $150,000 and $200,000 annually. According to leading importers the principal aromatic oils consumed in South Africa include almond, bay, bergamot, camphor, cassia, cedarwood, cinnamon, citronella, clove, geranium, jasmine, lavender, lemon,

neroli, rose, patchouli, peppermint, sandalwood, sassafras, spike lavender, thyme, tuberose, verbena, and wintergreen oils.

Consuming industries are growing in size and importance. Soap factories are one of the leading outlets for essential oils in South Africa. About 25 firms are engaged in soap manufacture in the Union, about half of which now produce toilet and fancy soaps. Progress in developing this industry in both output and diversification of product has been evident. Perfumery manufacture is also developing, such activity being carried on principally by manufacturing chemists. High customs duties on eau de Cologne and other perfumed spirits have led to the importation of perfumery essences in concentrated form for local preparation and packaging. A fairly well established flavoring extract industry produces a large share of the local market requirements using principally imported raw materials including essential oils. This industry is composed chiefly of scattered small establishments which in the aggregate constitute a fairly good market but which generally do not import direct from foreign sources but rather through large wholesale chemical houses in the large port towns. Brewing and distilling of beers, wines and liquors is a well developed activity in the Union which would be an important outlet for imported essences. Aerated water manufacture is carried on in 182 factories in the Union and the confectionery industry comprises over 70 manufacturers.

Relative Importance of Foreign Suppliers of Essential Oils.—Essential oil requirements of the Union of South Africa are derived from all parts of the world. The United Kingdom is the outstanding supplier, accounting normally for from 25 to 30 per cent of the total trade. Receipts from the United States consisting principally of peppermint oil represent about 7 per cent of the imports of essential oils. The following table shows the relative standing of the principal foreign suppliers during the past four years:

Methods of Selling Essential Oils in South Africa.—Only the larger consuming manufacturers are interested in importing essential oils direct from foreign firms. The smaller industrial consumers purchase from stocks maintained by the leading chemical importing houses of the Union or from manufacturers' agents in Johannesburg and Cape Town who handle these lines.

Lists of Firms Available.—To facilitate contact with South African buchu sources, a list of exporters of buchu leaves has been compiled which will be furnished to qualified American firms upon application to the Chemical Division. American essential oil exporters interested in selling in South Africa may find the following lists of value:

Toilet Preparation and Soap Manufacturers in South Africa.

Manufacturing Chemists.

Beverage Manufacturers.

Wholesale Chemical Houses.

Manufacturers' Agents Handling Essential Oils.

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