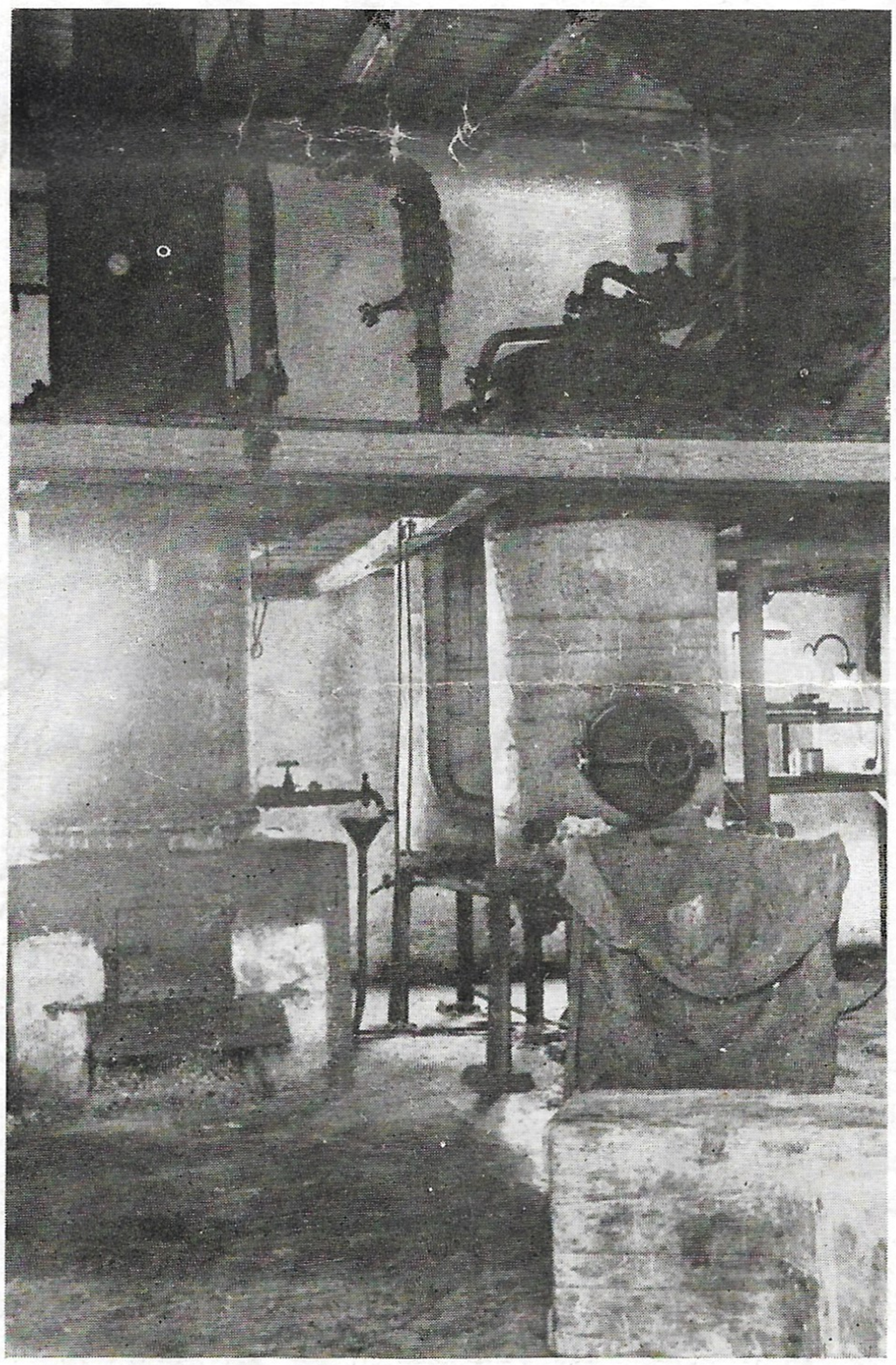
sole export harbor for oil of rosemary, has lost its significance in this respect.

The fact that in Dalmatia only rosemary leaves are submitted to distillation has, without doubt, great influence on the quality of the oil. Proper distillation in modern and clean steam stills is of secondary importance. The writer is inclined to attribute the high quality of the Dalmatian rosemary oil which is considered the finest in odor by many experts, to proper and careful selection of the plant material. In literature, Dalmatian rosemary oil is said to excel the Spanish oil. It is held that the Spanish rosemary oil is supposed to be distilled from plant material containing besides rosemary, other plants such as spike, sage, etc. From his own experiences in Spain, the writer is in position to state that the Spanish distillers never distill mixed plant material. Any inferiority of certain lots of Spanish rosemary oils must be attributed mainly to deliberate adulteration which feature, by the way, can just as often be observed in Dalmatian rosemary oil.

Comparison of *genuine* oil of rosemary of Dalmatian and Spanish origins reveals that the Spanish oil, although very good and strong and having a typical plant odor, is somewhat harsher in note, whereas the Dalmatian oil is softer and more delicate. The Spanish oil is, therefore, best suited for soap perfuming work and the Dalmatian oil for high grade perfumes (eau de Cologne) and especially for flavoring work. This difference, it appears, is due to the fact that the Dalmatian producers distill



INTERIOR SHOWING TYPE OF STILL



HANDFUL OF DALMATIAN SAGE

only the rosemary leaves while the Spaniards submit to distillation rosemary plant material consisting of leaves, small twigs and wooden parts.

This variation in selecting the plant material influences, without doubt, the physical and chemical properties of Dalmatian and Spanish rosemary oils.

Genuine Spanish rosemary oils have the following properties:

	Murcia Type (main production)	Granada-Jaen Type
Specific Gravity at 25°	0.896/0.898	0.898/0.900
Optical Rotation:	—0° 32′/—2° 27′	+4° 47′/+4° 53′
Total Borneol:	10.4%/10.9%	14.8%/15.1%
Ester Content:	2.6/2.8	2.8/2.9
Solubility:	Usually clearly soluble in 6 to 7 volumes of 80% alcohol; sometimes slightly turbid with addition of more alcohol.	Soluble in 7 and more volumes of 80% alcohol.

Slight variation from these properties is permissible, the oils described above representing only a few standard samples.

Dalmatian oils of rosemary of unquestioned purity show the following characteristics:

Specific Gravity at 25°:	0.899/0.904
Optical Rotation:	+2° 6′/+2° 38′
Total Borneol:	10.5%/11.8%
Ester Content:	2.3/4.2
Solubility:	Usually soluble in 2 volumes and more of 80% alcohol; sometimes slightly turbid with more.

The United States Pharmacopoeia, Tenth Edition, specifies an optical rotation for oil of rosemary varying from 0° to +15°.

It is interesting to note that the oils of rosemary of Dalmatian origin conform with the specifications of the U. S. P. whereas the bulk of oil of rosemary as produced in the Province of Murcia in Spain differs in that these oils in their pure form mostly show laevo rotation. This inconsistency of the U. S. P. must be attributed to the fact that those specifications have been taken over uncritically from older editions of the U. S. P. edited in years when oil of rosemary came almost exclusively from Dalmatia and to a smaller extent from Southern France.

The following constituents have been found to occur in oil of rosemary: α-pinene, camphene, cineol, camphor, borneol, bornyl acetate, a sesquiterpene (probably caryophyllen).