vary depending on the care taken in its manufacture, however, not to the extent before indicated. Table I represents, it is believed, more nearly the situation.

TABLE II.—VITAMIN A AND D ASSAY OF VARIOUS GRADES OF COD LIVER OIL.

Oil Prepared September 1927.

Class of Oil.	Vitamin A Assay U. S. P.	Vitamin D Assay Squibb.	Free Fatty Acid.
1. No. 1 Medicinal	Close to 700	>20 <33	0.3%
2. 2nd Medicinal	Close to 667	>20 <33	0.4
3. Poultry Oil	More than 667	About 16	5.8
4. Poultry Oil	>500 <667	Close to 20	1.95
5. Common Cod Oil	>400 <500	Close to 16.7	7.7

The vitamin D activity of the oils in Table II also indicates its destruction by exposure.

Classes 3 and 5 show the lowest activity and are the oils, which as observed in their preparation, are exposed longest to air and water.

SUMMARY.

1. The short exposure of oil to water and air before skimming, has a slight deleterious effect upon the vitamin A activity.

2. The long exposure of oil to water, and air as in the case of pressing chum has a marked deleterious effect on the vitamin A activity.

3. The standing of livers for twelve hours or longer before steaming has a marked deleterious effect on the vitamin A activity of the oil obtained.

4. Rotting livers produces an oil of low vitamin A and D activity.

5. Under best conditions for vitamin D test, the indications are that vitamin D is destroyed in cod liver when cod liver oil is exposed to water and air.

The vitamin A and D tests were carried out by the Biological Research Laboratory, E. R. Squibb & Sons, New Brunswick, New Jersey.

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QUALITY OF SPEARMINT OIL PRODUCED IN FLORIDA.*[1]

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The cultivation of spearmint (*Mentha spicata* L.) has not until recently been developed into an industry of much importance. The reason for this is probably due to the fact that in nearly every country of the earth it has been possible to find spearmint being grown in the home garden for home use. This situation prevailed for many years in the United States where it has been used for culinary purposes and for flavoring drinks and to some extent in pharmaceutical preparations. This situation resulted in a very poor market for the herb or its oil so that it has never become of much importance until the past few years, when American industries created a good demand for the oil. As a result some of the growers

* Produced in Medicinal Plant Garden, University of Florida.

[1] Scientific Section, A. PH. A., Miami meeting, 1931.

formerly engaged in the production of peppermint have now turned to the cultivation of spearmint. At present Michigan and Indiana produce practically all of the spearmint oil used in the United States.

During the experimentation with mints, that has been carried on under federal supervision, very little attention has been given to growing spearmint. Bulletins on mint farming barely mention spearmint but devote considerable space to the heretofore more profitable peppermint. Data in the literature concerning production of spearmint or quality of spearmint oils is very meager; neither have there been any attempts, until recently, to determine where spearmint might best be grown.

In view of the considerations stated above, the question arose as to the possibilities of production of spearmint in Florida. This problem involved such phases as (1) yield of green material, (2) yield of oil, (3) quality of oil.

DATA.

Rootstock for propagation was obtained from the Bureau of Plant Industry, Washington, D. C., and planted in the Medicinal Plant Garden during the summer of 1928. Since only a few roots were received, not enough material to work with was obtained the first season. In the spring of 1929, the roots from the original planting were spread out over a larger area and since that time two crops per season have been harvested.

TABLE I.—SHOWING QUALITY AND YIELD OF OIL.

Year.	Time Harvested.	Tons of Green Herb per Acre.	% Yield of Oil.	Pounds of Oil per Acre.	Sp. G. at 25° C.	Ref. Index at 20° C.	Opt. Rot. at 25° C.	Carvone Assay.
1929	June 26 and 27	5.78	0.590	63.14	0.9232	1.4897	−57.491	70%
1929	Oct. 11	1.40	0.164	4.6	0.9215	1.4859	−59.075	*80.2%
1930	July 10	3.97	0.437	34.7	0.9241	1.4825	−56.09	69.5%
1930	Oct. 11	2.318	0.399	18.5	0.9253	1.4837	−56.99	71%

Color of oil—nice yellow. Solubility in 80% alcohol—1 volume.

* See text on content of October yield.

DISCUSSION.

The variations in yield are likely due to seasonal differences and quality of soil. For example, the season of 1929 was characterized by an early spring with plenty of rainfall, but a dry fall. The season of 1930 was almost opposite in that the spring was late and very dry but a fall period with average rainfall. The crop of 1930 was grown on a new plot, not as fertile as that used in 1929. The poor yield for the fall crop of 1929 was undoubtedly due to the dry fall which considerably delayed growth as well, hence, the long period between harvests for that season. This long period of growth would also account for the low yield of oil and the unusually high carvone content of the fall crop of 1929.

Yield of Green Material.—Two to three tons of herb per acre each year is the average yield in the spearmint sections of Michigan and Indiana, this, of course, being obtained from a single harvest, usually in August. In Florida two cuttings each year have been obtained with a total yield in 1929 of 7.18 tons and in 1930 of 6.29 tons per acre or about twice as much per acre as is obtained in the present spearmint sections of U. S.

Yield of Oil.—According to Finnemore "The Essential Oils," page 793 and Gildemeister & Hoffmann, "The Volatile Oils," 2nd Edition, Vol. III, page 533, 20 pounds of oil per acre is considered an average yield. Referring to Table I, the total yield of oil per acre for the season of 1929 was 67.74 lbs. and for 1930, 53.2 lbs. which is about three times as large as the average.

Quality of Oil.—The most noticeable points of interest are the relatively high percentage of carvone present, and the high optical rotation. The 80% carvone content for the October oil of 1929 is very outstanding. A careful survey of the literature has failed to reveal any data on spearmint oil with a carvone content approaching this figure. Finnemore, page 797, gives the maximum range as varying from 61 to 72%, while Schimmel & Co., Reports 1927, give the range as varying from 42 to 60% of carvone. With the exception of this particular crop, the Florida spearmint oils fall within the range stated by Finnemore.

In regard to the optical rotations, it is to be noted they are slightly high as compared to the U. S. P. X range. The fact that the oil which contained the 80% carvone also had the highest optical rotation suggests that the high carvone contents of all these oils were responsible. That the opposite is true is shown by Finnemore, page 797, wherein he mentions oils containing 5 to 10% carvone having an optical rotation as low as —24°. The figures for optical rotation, as shown in Table I, indicate that the range of rotation in the U. S. P. should be modified. It is to be noted that in U. S. P. X the range was increased to —56° as compared to —55° in U. S. P. IX, probably because oils had subsequently been analyzed and found to have a higher optical rotation than the U. S. P. IX limit, due to high carvone content. This should be raised in the next edition of the U. S. P. to at least —59°. The lower limit should also be raised to at least —48°. It is claimed that dealers do not consider spearmint oil with a rotation under —48°. It is suggested therefore, that the next edition of the U. S. P. specify for spearmint oil an optical rotation from —48° to —59° in a 100-mm. tube at 25° C. It is further suggested that a standard of not less than 50% of carvone be adopted by U. S. P. XI.

FATAL IODINE INTOXICATION.

J. J. Eller and E. C. Cox (*Arch. Derm. and Syph.*, 1931, 745, through *Brit. Med. J. Epit.*, 1932, Jan. 16, 12) report a fatal case of iododerma in a man aged 31. The eruption commenced a few weeks after the administration of potassium iodide had been begun, the patient dying from profound iodide intoxication four months later. Large quantities of iodides were found in the urine during the month preceding death, and, at the post-mortem examination, in the skin, liver and kidneys. For four months he had received three doses daily of potassium iodide 5 grains with arsenic 1/60th grain. Various therapeutic measures, such as intravenous injections of saline solution, blood transfusion, sodium thiosulphate and the administration of glucose, were ineffective. It is suggested that by the ingestion of iodized salt for some years, the patient had become so sensitized as to develop a fatal iododerma after taking a tonic containing potassium iodide. Since there are other recorded cases of eruptions following the use of iodized salt, the authors conclude that the public should be warned against its indiscriminate use.—From—*The Pharmaceutical Journal and Pharmacist.*
