Chemistry. — *"Javanese Basilicum oil and methylchavicol"*. By Prof. P. VAN ROMBURGH.

(Communicated in the meeting of April 23, 1909).

In December 1900 I had the honour to communicate to the Academy the results of a preliminary research, which I had carried out in conjunction with Dr. TROMP DE HAAS, as to the composition of the essential oil of a variety of *Ocimum Basilicum* known as *selasih hidjau*.

It was shown that this oil consists mainly of methylchavicol.

Since then, I have procured larger quantities of this oil, and was thus enabled to isolate a few more components, and to find out more in particular whether an olefinic terpene may be present, which I had succeeded in isolating in large quantities from a related species (or variety).

The oil investigated showed $D_{14} = 0.962$ and $\alpha_D = + 1°20'$ ($l = 2$ d.m.). From 1500 cc., about 210 cc. were separated by distillation in water vapour. These were fractionated in vacuo.

Up to 88° were obtained 75 cc. ($\alpha = 9°17'$ $l = 2$ d.m.)
from 88—93° „ „ 105 „ ($\alpha = 1°16'$ $l = 2$ d.m.)
residue 26 „ .

The distillate up to 88° was once more fractionated and 28 cc. were collected boiling below 70° ($D = 0.856$) and 63 cc. boiling at 70°—85°.

As the fraction with the lowest b.p. had an odour of cineol it was freed from this by shaking with a 50% solution of resorcinol[1]). The fraction boiling at 70°—85° was also treated in the same manner. The layer floating on the resorcinol, amounting to 21 cc., was again fractionated in vacuo and finally, a fraction was obtained boiling at 60°—70°, $D_{15} = 0.8208$. The quantity, however, was too small to admit of a further separation. The density and also the odour of this fraction render it very probable that it contains indeed an olefinic terpene, probably ocimene, mixed with a cyclic one.

From the resorcinol solution, which had served for the elimination of the cineol, the latter was readily isolated by distillation in steam. The density ($D_{18} = 0.926$) and the reaction with iodol proved the identity. BERTRAM and WALBAUM had already shown the presence of cineol in German Basilicum oil and also in the Basilicum oil from Réunion [2]).

[1]) Semi-Annual Report of SCHIMMEL & Co., Oct. 1907. p. 32.
[2]) Arch d. Pharm. **235**, 176 [1897].

The methylchavicol, which was obtained by fractional distillation from Javanese Basilicum oil, still showed a faint rotation (1°30' in a 2 d.m. tube).

In order to eliminate the active ingredient, which could not be separated by fractional distillation, it was treated with various reagents such as acetic anhydride, sodium hydrogen sulphite, potassium permanganate, but all in vain; the rotation did not diminish. A treatment with magnesium-ethyl iodide, which was repeated a few times, finally answered the purpose. The boiling point of the main mass was found to be 214°—215° (corrected).

Analysis: found 79.88 C, 8.26 H; calculated 81.08 C, 8.1 H.

During the fractional distillation of methylchavicol it will be noticed that the residue in the flask often deposits some crystals.

These may be obtained in a somewhat larger quantity by heating methylchavicol in sealed tubes for 48 hours at 250°. The contents of the tubes has then turned yellow. After distillation up to 240° (thermometer in the liquid) the residue is placed in an ice chamber. A crystalline mass is formed from which the oil is removed by suction. After repeated recrystallisation from acetone and alcohol the main product isolated melts at 98° [1]), while a substance melting at 166° is also obtained. The solutions of these substances in petroleum ether and in benzene exhibit a beautiful blue fluorescence which is particularly strong in the case of the substance melting at 166°. Traces of a substance melting above 200° were also formed, but the yield of these crystallised substances is rather small.

The elementary analysis gives the same results with the two first named substances and agrees with the analysis of methylchavicol.

The determination of the molecular weight of the substance melting at 98° in acetone with RUBER's apparatus gave 308, 311 and 308. A determination in chloroform gave 280. The substance melting at 166° gave, in chloroform, 293, 290 and 279 as molecular weight. As the molecular weight of methylchavicol is 148, these substances should therefore be dimerides of the same.

The substance melting at 98° combines with 1 mol. of bromine and forms a compound melting at 87°.

Analysis: found 35,04 Br; calculated 35.05 for $C_{20}H_{24}O_2.Br_2$.

The investigation of these polymerides, which up to the present is only of a preliminary nature, owing to the great difficulties connected with their preparation, is being continued.

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[1]) The complete purification of this product is very troublesome and the melting point is not very sharp.