

NOTE ON PURE AND COMMERCIAL CIVET.

BY HERBERT E. BURGESS.

(Read at the Meeting, December 3, 1902.)

CIVET is of considerable value in perfumery as a fixing agent, and this may be due to the fact that its chief constituent is a fatty acid which is only slightly volatile. In appearance it is of a light-brown colour, having a consistency similar to vaseline, and is unctuous to the touch.

I have taken every precaution to obtain samples of whose purity there can be no reasonable doubt, and have had placed at my disposal a small amount of civet which has been actually obtained from the cats kept by a large firm.

Other samples—Nos. 1 and 2—have been obtained from the Zoological Gardens, Regent's Park.

These samples, although undoubtedly pure, differ somewhat from commercial civet, inasmuch as the secretion has been deposited on the sides of the cage and allowed to stand some considerable time. Consequently it is much dryer than commercial civet, which is taken from the pouches of the animals by means of a spoon.

No. 3 is a sample obtained from a reputable firm in London, and invoiced as "Absolutely Pure Civet."

No. 4, ordinary commercial civet.

No. 5, pure civet, own extraction.

On examination under the microscope it is always found to contain hair, wood-pulp, sawdust, etc. On distilling samples Nos. 1 and 2 with steam practically no oil distilled over, but with Nos. 3 and 4 a few drops distilled over. This was insufficient for further identification.

On heating the civet to constant weight in a water-bath, which took twenty-four hours, the following results were obtained :

	Moisture and Volatile Matter. Per Cent.				Ash. Per Cent.
No. 1	...	6.3	...	...	2.7
No. 2	...	4.5	...	...	3.1
No. 3	...	27.0	...	...	2.1
No. 4	...	12.3	...	...	1.1
No. 5	...	15.9	...	...	3.3

The ash was dissolved in HCl, when a considerable amount of CO_2 was evolved. The insoluble portion was found to consist chiefly of calcium carbonate. It contained aluminium, potassium, and magnesium, with chlorides and sulphates, also a considerable amount of SiO_2 .

In the examination of civet, extraction with acetone and chloroform and titration of the resulting extract probably enables the most reliable opinion to be formed as to its purity. The method I adopt is to weigh out about 5 grammes of the civet into a tared filter thimble and extract with about 150 c.c. of chloroform, using an enclosed Soxhlet extraction apparatus, repeating the operation on another 5 grammes, using acetone as a solvent. In cases where only a small amount of the sample is available for examination the acetone extract will give the more valuable information as to its purity, and this for reasons that will be apparent later on.

RESULTS OF EXTRACTS.

	Chloro- form.	Saponification Number.	Acetone.	Saponification Number.
No. 1	... 75.8	(43.1)	—	—
No. 2	... 75.35	(45.1)	69.6	(61.0)
No. 3	... 43.6	(114.2)	47.2	(113.0)
No. 4	... 83.0	(113.8)	79.6	(112.0)

The amounts of residue found in the thimbles is shown in the following table :

LOSS AT 100° C.

	H ₂ O, etc.	Ash.	Acetone Extract.	Saponifi- cation Number.	Residue.	Chloro- form Extract.	Saponifi- cation Number.	Residue.
No. 1	6.3	2.7	—	—	—	75.8	43.1	—
No. 2	4.5	3.0	69.6	61	27.2	75.4	45.0	—
No. 3	27.0	3.5	43.6	114	28.9	47.2	113.0	23
No. 4	12.0	1.1	79.6	112	4.7	83.0	114.0	33
No. 5	15.9	3.3	60.0	33	21.0			

Commercial civet has been found to be adulterated with butter, lard, soft soap, and various other fats, and quite recently vaseline has been found to be often used for purposes of sophistication.

I am indebted to Mr. E. J. Parry for the following method of detecting this substance in a quantitative way, and have found that it worked in a fairly satisfactory manner with samples containing definite amounts of vaseline.

The method of procedure is as follows: About 5 grammes of the civet are treated with 50 c.c. of acetone in the cold. After thorough mixing, it is filtered by suction, and washed with another 50 c.c. of acetone. After allowing to drain some time, the mass is removed from the filter-paper, transferred to a small beaker, treated with 50 c.c. of light petroleum spirit, filtered into a tared flask, and washed with a further quantity of petroleum spirit until the washings leave no residue on evaporation. It is desirable to add a considerable amount of the spirit when samples containing large percentages of vaseline are examined, otherwise filtration is very slow.

The spirit is then distilled off and the residue dried and weighed. It is necessary to test the presence of vaseline by one of the usual methods, but, as bodies having a saponification number are almost invariably used to adulterate this substance, a titration with $\frac{N}{2}$ KOH will usually give a good idea as to the nature of the residue; in fact, when vaseline has been used, I have generally been able to separate it in a fair state of purity by this method. Sample No. 1 gave by this method 4 per cent. of petroleum extract having a saponification number of 81, whereas sample No. 3 gave 11 per cent., having a saponification number of 95, and the same sample with 2 per cent. vaseline gave 12.7, a difference of 1.7 per cent. having a saponification number of 74.8.

I may here quote a few determinations made by Mr. Parry by this method, which show that concordant results may be obtained.

COMMERCIAL ADULTERATED SAMPLES.		GENUINE CIVET.
Vaseline found (two determinations).		
3.26	3.40	0.3
3.22	3.10	0.4
3.12	3.30	0.25
4.06	3.94	0.3
6.04	6.3	
9.95	9.88	
6.4	6.2	
5.3	5.14	
4.02	4.24	
6.00	6.14	
7.24	7.02	
2.2	1.90	
2.4	2.20	
1.9	1.8	
4.82	4.6	
3.3	3.55	

I have made nitrogen determinations by the Kjeldahl method, and have found that civet contains about 1.3 per cent. of nitrogen, but I have not investigated the nitrogen-containing substance in order to determine its nature.

A. Hebert (*Bull. Soc. Chem.*) states that he has found skatol present. This I have been unable to confirm.

I have to thank Mr. T. H. Page, B.Sc., for assistance in the analytical work of the paper.

DISCUSSION.

Mr. HEHNER inquired whether any knowledge existed as to the nature of the odoriferous substance in the civet. That it was a fatty acid, as the author had suggested, seemed improbable.

Mr. CHAPMAN inquired what would be the effect of neutralizing the fatty acid.

Mr. ALLEN said that it was interesting to bear in mind that some fatty acids (butyric acid and valeric acid, for instance) had distinct odours which were attractive to cats. It would be interesting to know the combining weight of this fatty acid, and whether it approached that of caproic or valeric acid, or whether it was one of the higher homologues.

Mr. BURGESS, in reply, said that as yet nothing was known as to the constitution of the odoriferous substance, but he himself thought that it was undoubtedly the fatty acid he had referred to. The odour persisted when the acid was neutralized, and also after it had been converted into its potassium salt. He had not attempted to determine the combining weight of the acid, but he knew that it had a high boiling point.
