XVII.—*Preliminary Notice on the Action of Ammonia on the Oils and Fats.*

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Few experiments having been made on the action of ammonia on the oils and fats, I have turned my attention to this subject, and in the laboratory of Professor Anderson, of Glasgow, have submitted several oils and fats to the action of ammonia.

As the experiments are likely to occupy some considerable length of time—owing, in most cases, to the slowness of the action—I have thought it advisable to send a short notice of some compounds already obtained, reserving for a future period the full details of my experiments.

At present I wish to confine my remarks to the compounds obtained, firstly, by the action of ammonia on almond and castor oils themselves, and secondly, to those obtained by the action of ammonia on the same oils after they have been solidified by the action of nitrous acid gas. By the action of ammonia on almond and castor oils, crystalline compounds are obtained; that from almond oil I have examined, and find it to have the formula $C_{36}H_{35}NO_2$, being that of oleamide.

The compound from castor oil, M. Bouis has examined, and he gives to it the formula $C_{36}H_{35}NO_4$, and names it Ricinolamide.* When nitrous acid gas is passed into almond or castor oil, these oils are converted into solid compounds called Elaidine and Palmine. In the case of elaidine, this change is said to be effected without any decomposition taking place, elaidic acid having the same formula as oleic acid. But according to the experiments of Playfair, a decomposition must take place when castor oil is acted upon by nitrous acid, as he gives the formula $C_{34}H_{33}O_6$ to palmitic acid, which differs from that of ricinoleic acid by C_2H .

To ascertain the correctness of these opinions, I have subjected elaidine and palmine to the action of ammonia, and have obtained beautiful crystalline compounds from them, differing in many respects from oleamide and ricinolamide, but having exactly the same formulæ as those two amides.

* This compound I have also obtained, but did not examine it, M. Bouis having already done so.

From these results it would appear that castor oil does not undergo any decomposition when acted upon by nitrous acid, but that the change must be similar to that which takes place in almond oil when it is subjected to the action of this acid. The formula of palmitic acid should therefore be altered to $C_{36} H_{34} O_6$, palmamide being $C_{36} H_{35} NO_4$.

The following table shows the relations between these acids and amides :—

Oleic acid.	Ricinoleic acid.
$C_{36} H_{34} O_4$	$C_{36} H_{34} O_6$
Oleamide.	Ricinolamide.
$C_{36} H_{35} NO_2$	$C_{36} H_{35} NO_4$
Elaidic acid.	Palmitic acid.
$C_{36} H_{34} O_4$	$C_{36} H_{34} O_6$
Elaidamide.	Palmamide.
$C_{36} H_{35} NO_2$	$C_{36} H_{35} NO_4$

I hope, in a future communication, to bring before the notice of the Society some other compounds which I have obtained.